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LIGHT ⁘ HEAT ⁘ POWER ⁘ BYE-PRODUCTS

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EDITORIAL NOTES.

Sir David Milne Watson.

THE whole gas industry will rejoice in the honour which His Majesty The King has conferred upon David Milne Watson, LL.D., D.L., the Governor of the Gas Light and Coke Company, and President of the National Gas Council. The distinction was never more richly deserved; for the new Knight has represented and led a large industry which, through years of peril for the country, has rendered magnificent national work. To us in the industry, Sir David has been something more than a representative and leader. He has been for it a worker—a worker self-sacrificing and of extraordinary energy and capacity. As we look back over the doings of the fateful years since Sir David became Governor of the Gas Light and Coke Company and President of the National Gas Council, and recall all that has been involved in them for the industry, we can only marvel at the expanse of the history and the variety of activities and doings with which his name has been associated. The gifts of a diversified ability, of clear perception, and sound diplomacy are in strong evidence, and enveloping them personal attributes which, with men in all stations of life and spheres of power, gain entrance and success. There is no question that, from the standpoint of personal qualification, no man could have been better fitted for the work which has been required by the industry in the years during which Sir David has taken such a prominent place in our counsels, and in championing our cause. But there is another thing which, in the hour of our congratulations to Sir David and of rejoicing over the honour done him by His Majesty, may be appropriately mentioned. It is that, although the Gas Light and Coke Company is great and influential enough to fight alone for itself, it has generously thrown its strength and influence into the work of the whole industry, and for the benefit of all gas undertakings whatever their magnitude. It has been the "big brother" in the industry; and we know to whose influence this is due. The distinction conferred upon the Governor of that Company and the President of the National Gas Council is also a recognition of the national services of the gas industry, of which His Majesty The King knew much before his memorable visit with the Queen, only a few months since, to Beckton. The event which to-day it is our pleasure to record is highly opportune, coming as it does when the industry has accomplished so much for the country during seven months of national extremity. But throughout the industry there will be the sincere feeling that the recipient of knighthood has nobly won it by unstinted and far-reaching personal service.

The New Year.

THE New Year opens with good prospects. The country deserves both the prospects and their materialization. It can breathe with more freedom than it could this time last year, when the outlook was ominous; and it materialized. But the country met its subsequent troubles with a rock-like firmness, which shattered the confidence of those who engineered them, and left them wallowing in the mire of their own making, and ignominiously defeated. But the doings of the year have left their marks on industry, and upon the labour organizations of the country—marks which will not be readily effaced. The wise ones in the labour world realize that what has happened, instead of bettering, has worsened, employment. One cannot destroy, and still possess. Water cannot be obtained from a dry well; and better conditions for men cannot be secured from a depreciated industry. After the experiences of last year, the new one should start with the good resolution that all engaged in industry and trade shall pull together, with the view of making industry as prosperous as possible. Prosperity is the only source of betterment in conditions.

The principal leaders of the trade unions of the country, with the issues before them of the past year's titanic struggles, are now of opinion that strikes have little avail; on balance, they do more harm than good to the cause of labour. The only substantial thing that issued from the general and coal strikes is loss, which will be a drag on the country, on industry, and on labour and its organizations for long to come. Those concerned should dispassionately review the position, and determine the causes which have degraded—temporarily, it is hoped—the economic conditions of the country; and, having settled upon them, they should uproot them. The causes are not what they are represented to be—for the sole purpose of serving factious, reactionary, and revolutionary interests, by creating unrest and disaffection among industrial workers. In this there has been conspicuous failure; and there always will be in Great Britain. The coal stoppage illustrated plainly the methods of operation, which are constructive not of good, but of evil. They seek to supplant economic conditions by uneconomic ones, in order to weaken industries, and, by so doing, to create discontent among the workers. There is a profound craftiness in this, with the set purpose of enlisting men in the revolutionary ranks. However, the trade unions, having lent themselves to these men, are about "fed up" with them, and the results of their tactics. The past year has opened their eyes to things they had not previously detected. The real results of such movements are more comprehensive than was anticipated. While retarding the interests of industry, they destroy the power of the trade unions, and practically bankrupt them; they also destroy employment, and that is much easier than creating it. Such results are not desired, but they are the concomitants of the methods pursued. However, as we enter the New Year, there is the prospect that the genuine leaders of the trade unions will exercise their authority, and operate to curb the activities of men who desire to subvert as a means to the attainment of their nefarious ends. There is good ground for hope that this year will be one of repose so far as industrial labour goes. If this happy condition prevails (and we have every hope that it will), then we may look for a revival of industry and trade which will redound to a general prosperity, in which the gas industry will share.

So far as the gas industry is concerned, its greatest trouble is that it starts the New Year with the disadvantage that, in most supply areas, the price of gas is higher than it would have been had there been no coal stoppage. The recent high cost of coal both from abroad

and from our own collieries, and the stiff prices which have still to be paid for contract coal from abroad, have (to the extent that they represent additions to ordinary figures) to be wiped-out before the industry reaches normal again in respect of gas charges. But the sooner that time arrives, the better for every undertaking. The prospects for gas business are good. The coal stoppage did us the good turn of assisting in the introduction of gas appliances to many people who had not used them before, and of increasing the connections of those who had had experience of them and knew their value. Of course, we must not ascribe to the coal stoppage all that has latterly been done in enlarging the heating load, because, during the past three or four years, there has been an accelerated rate of increase in the adoption of gas fires and other heaters, and that rate would have continued, particularly with the lower price for gas which obtained before the coal stoppage. We fully anticipate that, when a return to lower gas prices can be made, and when the accumulated additional costs of high-priced coal have been liquidated, we shall maintain the rate of business increase of latter years.

Regarding the price of coal, it should not be long before British coals stand at the figures which existed in the spring of last year. We are now half-way through the winter; but the country is suffering from the fact that, owing to the absence of the usual winter stocks, there is pressure for coal everywhere. This gives a temporary advantage to those with coal for sale; but we are approaching the season when the reduction of consumption will commence, and the colliery owners will be desirous of entering into contracts at lower prices than those which are current. They will also be anxious to recover the lost export markets; and this will not be done without prices which are competitive with those of other countries. It must not be overlooked that those other countries have gained experience during the coal stoppage which will be of immense value to them in the competition which must ensue. In order to send supplies to this country, and to serve other countries which previously took British coal, they have increased the production of their collieries enormously, and now they probably know more regarding their capacity in this respect than they knew before. Consequently, there will be keen competition, with its effect upon prices. In view of these considerations, it may be anticipated that new coal contracts will be entered into at something like the figures which prevailed last spring.

This year we may look for developments in connection with the gas industry which, it is hoped and believed, will have a marked influence upon its progress. Glancing over the preparatory work, it is seen that it takes into account the influential developments which are occurring outside our industry, and which it is calculated will affect our interests unless counter movement be made. We have before us the legislative programme of the National Gas Council, which it is expected will be making an early move, and which will, if successful, confer new powers upon the industry in several important directions. In connection with the gas business, the policy of maintenance will be brought under consideration (through the "B.C.G.A." and Institution Conference and otherwise) with greater vigour and concentration than has hitherto been the case. On all sides, we are now assailed by competition. In the electricity industry, there is greater activity to-day than ever before; and in no respect must the gas industry allow any valuable protective method to remain unused. Inspection and maintenance of consumers' gas equipment is a method of prime importance. Further, the industry's interests will be well represented in connection with the work of the National Fuel and Power Committee, which is one issue of the far-reaching inquiry by the Royal Commission on the Coal-Mining Industry. The Joint Committee of the National Gas Council and the Institution of Electrical Engineers should also be productive of good in respect of collaboration in the utilization of fuels or waste heat. We may anticipate, too, as a result of the work of the National Fuel and Power Committee, that the practice of the cleaning of coal will be considerably advanced; but, in connection with the scheme for the promotion of coal-selling organizations, there is much to be learned before decision can be made regarding its advantages or otherwise to the gas industry.

As to secondary products, it is probable that the prices of coke and tar will not be greatly affected during the winter months, and as long as the prices of coal—particularly the household varieties—remain at existing levels. Last year saw developments in connection with coke research; and, in this relation, the gas industry's own interests demand that there shall be careful watchfulness and exploration, including an extension of research into the effects of the conditions of the charge in the retort upon the quantitative and qualitative characteristics of the products. Tar is also likely to invite considerable attention during the year, in view of the discussions at the recent Tar Conference, and the proposed formation of District Committees of tar producers and road surveyors for working to mutual benefit in such matters as the preparation of tar for road purposes, and its application to best effect. In respect of sulphate of ammonia, the position of synthetic nitrogen has entirely altered the outlook; but there will be considerable interest in watching the results of the founding by the Sulphate of Ammonia Federation of the auxiliary commercial Company, Nitram Ltd.

Having regard to the influences—unfavourable and otherwise—of the conditions which prevailed last year, we think it may be said that the New Year is full of promise for the gas industry—in respect both of business and paving the way for increasing its stability and promoting the development of its vast interests. But it is necessary, for the attainment of the ends in view, that all sections of the industry shall pull together with all the power at their command.

Rivalry from the Coke-Oven Industry.

CIRCUMSTANCES have prevented an earlier editorial reference to the paper by Mr. L. H. Sensicle, B.Sc., F.I.C., which was read at a recent meeting of the Newcastle Section of the Society of Chemical Industry, and a summary of which was published in our columns on Dec. 22 (pp. 774-6). In the paper, the author assumed the rôle of a prophet, thought not dogmatically; and he also made comparisons which, from our point of view, were not strictly fair. But, we think, the paper may be taken as a true sample of the outlook in the coke-oven industry, and of the tendencies which are operating in it, which outlook and tendencies have importance for the gas industry. It has long been known that the coking industry has its eye upon the domestic coke market—particularly since smoke abatement has come so much to the fore. The owners of coke plants see that mountainous annual consumption of 38 to 40 million tons of domestic coal, and they know it is wrong to use it in raw state. They detect in it a big source of revenue for the future, and a means of effecting not only an extension of their present circumscribed business, but a good balance in the operation of the coking plants for the production of metallurgical and domestic fuels according to market and other circumstances. It is clear that Mr. Sensicle is of opinion that the coke-oven industry is in a better position to take on the new coke load than the gas industry; the gas industry has other views. But it does not covet the whole lot, though, of course, the time is distant, with a (in this matter) meticulous Government in power, when crude domestic fuel will be replaced by prepared non-smoke producing fuel. We have no doubt that eventually both industries will find a satisfactory field for enlarged operations in that 40 million tons of domestic coal. But Mr. Sensicle, on the premises he selects, comes to the conclusion that "it would seem necessary to look to the bye-product coking industry for the great expansion necessary to cope with the new demand."

Let us examine those premises. Mr. Sensicle says that, in the gas industry, the coke output is strictly limited by the demand for gas, which is only increasing at a rate somewhat greater than the growth of population. There he is rather at sea. The increase of consumption per consumer is making excellent headway, and to that ex-

tent will curtail the market for solid smokeless fuel. He also thinks it is obvious that the gas industry alone is not likely, while proceeding along the present lines, to make great inroads into the new market. The gas industry, we believe Mr. Sensicle will admit, has shown a wonderful adaptability to circumstances during the remarkable last twelve years or so; and we do not trace any loss of facility for doing so. Then he finds that the present tendency in the gas industry is to lower coke yield and increase the gas therm product, including the driving-off of the last trace of volatile matter by intensive heating—a policy which, he says, is incidentally tending to reduce the combustibility of the coke considerably below that obtainable some years ago. Mr. Sensicle knows as well as we do (in fact, he touches upon it) that work is proceeding which may have a great effect upon the physical properties of high-temperature coke, and bring it to a state in which a low volatile content will not be a detriment. Then he suggests that gas undertakings are hemmed in considerably by statutory obligations as to capital, dividends, and price of gas, which will act as a deterrent to radical changes of policy. Perhaps he will permit us to point out that legislative enactments can be altered to suit new circumstances, as witness the Gas Regulation Act. However, these are somewhat lean premises to the positive statement that "it would seem necessary to look to the bye-product coking industry for the great expansion necessary to cope with the new demand." A more important fundamental to the consideration of this question is supplied by Mr. Sensicle himself. Speaking of the utilization of coke-oven gas for town supply, he says: "Gas managers in this country have been chary "about taking coke-oven gas for town supply; and the "reason is not far to seek. One of the great essentials "for successful town distribution is a steady supply, year "in year out; and of recent years the bye-product coking "industry has shown few signs of being able to satisfy "this condition." Then it has shown itself to be totally unfitted to become the supplier of domestic fuel; for continuity of supply is an essential in respect of coke as well as of gas, though the final goal for all heating work is not labour-creating solid fuel, but labour-abolishing gaseous fuel. Then, again, we see that Mr. Sensicle admits that "gas-works are indeed admirably situated to take advantage of the market, placed as they are in the midst of the great consumers—the town dwellers." The gas undertakings are locally established; the coke-oven plants are not. To retail their fuel, there would have to be middlemen, and the transport of coke long distances. Economically, both technically and commercially, we are of opinion that the gas industry with its local works and established trading organizations holds the field in this respect. All things considered, it might be a simpler, and more politic, matter to transfer the making of metallurgical coke to gas-works—thus giving the iron and steel industries greater assurance of supplies than they had in 1921 and 1926. The materialization of any hopes and anticipations of the coke-oven industry in respect of the provision of solid domestic smokeless fuel must be retarded by the public demand for such fuel. In this connection, it is well to note that the Government are loth to grant any legislative acceleration to change in this respect; and the gas industry is working assiduously to displace solid fuel by gaseous—and not unsuccessfully.

Leaving the questions of policy and prospect, there are two or three technical matters. In our opinion, Mr. Sensicle was unfortunate in his choice of figures from Stockholm, to show the saving in labour of bulk carbonization for gas making. It would have been better had he taken for comparison the chamber ovens at the Stockholm Gas-Works, and typical modern continuous vertical retort plants in this country. The Stockholm figures show that the therms produced per man per day are for vertical retorts (steamed), 516; vertical retorts (unsteamed), 454; horizontal retorts, 541; and horizontal chamber ovens, 1216. The Stockholm vertical retort installation is one of the oldest erected before the war; and it is not operated to produce the largest quantity of gaseous therms, but rather for coke production, and vertical retort coke is a good domestic coke. We have before us figures from a gas-works with a modern continuous vertical retort installation which show that when 80 therms are being produced per ton of coal carbonized per day, the average yield per man per day is 1280 therms, as against 1216 for the Stockholm chamber ovens. The 1280 is typical of other modern vertical retort installations in this country; and the cardinal consideration in the adoption of chamber ovens is not therms per man. There is no question, too, that Mr. Sensicle is strongly of the view that the modern trend of high-speed coking ovens has brought bye-product coke into the forefront. He adds: "Made usually from "washed coal, such coke is considerably lower in ash "than gas coke. Steaming with its effect in increasing "ash content is not resorted to, while in the latest prac-"tice carbonization is not pushed until the last ounce of "volatile matter is expelled." The author seems to be unaware that steaming does not appreciably increase the ash content of coal. Steam acts on the outer surfaces of the particles of the charge in the vertical retort; and besides gasifying carbon, releases the ash embodied in those surfaces.

In conclusion, it may be said that, excepting in special circumstances, or where gas from coke-oven plants is regarded purely as a bye-product, and sold to gas undertakings at a price per therm somewhat below their own manufacturing costs into the holder, there is no economic advantage whatever in pithead production of town gas over local manufacture. And if the coke-oven industry is to compete seriously in the domestic coke market, then it will have to assure itself of the disposal of its gas, and at a price below local holder cost. It may also be said that, gas being their primary business, gas undertakings must generally speaking—while not disregarding the economic situation in respect of bye-products—be based on the production of the largest possible volume of saleable gas per ton of coal handled. It is found, under normal market conditions, that it is more profitable to increase the make of gas per ton by 10 or 15 therms than to aim at the sale of 1 or 2 cwt. more coke per ton of coal carbonized. Of course, we agree that all practicable measures should be taken to maintain a good quality in the coke produced. We are afraid that Mr. Sensicle has to extend, from the point of view of the gas industry, his survey of the matters with which he deals in the paper. It shows that, for comparative purposes, his information of the gas industry is not of that complete order which is necessary to authoritative pronouncement.

Policy of Area Extension.

IN the coming session of Parliament, there are not many Bills dealing with gas supply. The method of securing additional powers through Special Orders has largely superseded direct application to Parliament. Hence the reduction in the number of measures which are promoted to face the old-time procedure. But those which will be submitted to Parliament this year contain an outstanding feature—that is, the extension of areas of gas supply by some of the larger undertakings, and the absorption of smaller concerns. Curiously, in all cases they are local authority undertakings that are making this move. The Birmingham Corporation are proposing in a General Bill to extend their administrative area, so as to include the urban district of Perry Barr. The acquisition of the Kenilworth Gas Company is a proposal of the Coventry Corporation. The Leeds Corporation are seeking to take under their wing the area and undertaking of the Crossgates, Halton, and Seacroft Gas Company, Ltd. The Manchester Corporation are contemplating the purchase of part of the undertaking of the Stretford and District Gas Board and the Altrincham Gas Company. The Matlocks District Council are desirous of extending their gas limits, so as to include the parishes of Dethick, Lea, and Holloway. The Smethwick Corporation wish to embrace in their area the urban district of Oldbury, and to extend the limits of gas supply so as to include the whole or any part of the added area. The Wallasey Corporation are desirous of extending their territorial boundaries, of incorporating the added areas in their limits of gas supply, and of acquiring the rights of various authorities in this respect. The West Bromwich Corporation are

seeking parliamentary consent to an extension of their boundaries, so as to include a portion of the urban district of Perry Barr, to add the new area to their limits of gas supply, and to exclude it from the limits of supply of the Birmingham Corporation. It looks as though the policy of concentration of gas production at, and supply in outer areas from, the more economically conditioned works is going to make excellent headway. From past action in this connection, there has come a vast amount of proof of the value of the policy not only to the communities, but to the undertakings concerned. It is not a policy with a one-sided issue; there is benefit in securing "pastures new," and in adding to output, and to the diversity of demand. The gas industry pioneered the principle of concentration of production; but it has never been established as a definite policy throughout the industry. The Government electricity scheme has altered the aspect of the matter, and more general consideration is being given to it, and on broader grounds than ever before. In other public utility services and in other industries, we see the process of amalgamation and concentration going forward—the latest example being the gigantic chemical combine.

The Gas Industry as a Colliery Owner.

IN our "Correspondence" columns to-day, Major P. H. Richardson suggests that the gas industry should request Parliament to give it power to raise sufficient money (to be guaranteed by the Government) for it to purchase a controlling number of shares in those coal mines which produce the type of coal best suited for carbonization. He also points out that, as most of the employees of the big gas companies are co-partners, it would follow that those mines would speedily be co-partnership manned, with the result that there would be assurance that the country would have a supply of the most important commodity next to food and water that is required for its existence. Moreover, middlemen's coal profits would be cut-out (where they exist); and the price of gas would quickly be reduced, with the result that there would be a greater sale of gas and coke—thus placing the gas industry in a premier position as suppliers of light, heat, and power. Coal could be cleaned at the pithead, thus obviating the transport of incombustibles, and contributing economies to the production of gas and coke, as well as improving the quality of the latter commodity.

The ideal is all right; the carrying of it into effect is another matter. Certain of our largest municipalities have from time to time considered the question of purchasing collieries for the supply of their gas undertakings; but investigation has always shown that ideals and practicability do not in this regard go hand in hand. It must be remembered that a colliery does not produce only one class of coal, and the gas industry could hardly hope to come into successful competition with the well-established coal-mining undertakings of the country for business in the classes of coal which are unsuited to gas making. The gas industry also draws on every coalfield in the country; and varieties of coal from several sources have to be used by many of the big undertakings. We are afraid that the removal of the freedom of purchase where and when gas undertakings like would not have a good effect upon the industry's economy; and, in short, it would not be practicable. The question of obtaining from the Government a guarantee for the capital employed is of secondary importance. But, if required, the gas industry could make out a splendid case for the Government treating it in the same way as they have its competitors in guaranteeing many millions of capital. The services of the industry during the Great War and two national coal stoppages were invaluable to the country, and supplied the strongest possible resistance in one case to the enemy, and, in the other, to revolutionary forces.

However, the question raised by Major Richardson is one which is so complex that it cannot be fully discussed off-hand; but we are of opinion that investigation would disclose impracticability. We are not surprised that our correspondent writes: "I do not pretend to know what "all this would cost;" and we are afraid that inquiry would undermine the confidence he now possesses that "the men in whose hands the gas industry now lies are capable of a broad enough vision and sufficient energy to carry some such scheme to fruition."

Minimum Dividends.

The Commercial Gas Company are following the lead of the South Metropolitan Gas Company and the Gas Light and Coke Company, and will apply to Parliament in the coming session for the institution of a basic or minimum dividend. If they are successful, then all the holders of ordinary capital in the three London Companies will be protected against a bottomless sliding-scale, with the benefit to the undertakings and the consumers of the enhanced stability of the capital employed in their service.

Powers Under the Capital Issues Act, 1920.

The uncertainty which has existed on a question of law regarding the Public Utility Companies (Capital Issues) Act, 1920, was recently submitted by the National Gas Council to Counsel for his opinion. The point raised was whether a company which, in pursuance of Section 1 of the Act of 1920, issued debenture stock in excess of the amount authorized by their Special Act thereby permanently enlarged to that extent their original statutory powers of issuing debenture stock. Counsel is of opinion that the reply is in the negative. With the expiration of the 1920 Act, it is his view that the Special Act regulates as before the powers of the company, but that the validity of the issue made in pursuance of the 1920 Act is saved by section 2 thereof. In the case of a company who have issued irredeemable debenture stock, in virtue of the 1920 Act, the continued validity of such issue after the expiration of the Act may, in his opinion, in effect be tantamount to a permanent increase of the original powers of the company in their Special Act; but the true legal conception of the position is not that the provisions of the Special Act have been altered, but that an issue *ultra vires* of the Special Act has obtained statutory sanction apart from the Special Act. With regard to redeemable stock, a company who under the Act created additional loan capital to meet emergency requirements, and are not in a position to pay up the stock at maturity out of their then existing funds, may make provision under the schedule to the Act for the re-issue of the stock or the substitution of other stock. But if the company simply pay up the stock at maturity without resort to these expedients, the whole transaction validated by the Act of 1920 comes to an end. If the company were to seek to borrow again by a fresh issue of debenture stock what they have paid up in cash, they could find no sanction for so doing either in the Special Act or in the expired Act of 1920. In this event, if the company need more loan capital, they must resort to the ordinary means for obtaining an extension of borrowing powers.

Production per Square Foot of Area.

In this issue is an article on the new carbonizing plant at Margate. A feature is that it contains the largest continuous vertical retorts constructed on the Woodall-Duckham principle. They have a major axis length of 103 in. The house in which this installation has habitation previously held inclined retorts, with an output of 1,100,000 c.ft. per day, or 200 c.ft. per square foot of ground space per day. As the article shows, only part of the house is occupied by the new installation, which produces 1¼ million c.ft. of gas, or 543 c.ft. per day per square foot of ground space. When the building is completely filled with vertical retorts, its daily output will be 4,500,000 c.ft., or 816 c.ft. per square foot per day. This is a notable example of how modern carbonizing systems can augment production on a given ground area.

Low-Temperature Carbonization.

The present administration of Low-Temperature Carbonisation, Ltd., are directing their energies to proving the system on commercial lines. The financial re-organization of the Company has been carried through; and the new Chairman, Sir Arthur Wheeler, Bart, D.L., J.P., informed the share-

holders last week that it has been decided to erect a plant of sufficient capacity to give commercial results. If the Board are perfectly satisfied that the technical efficiency of the process is of a successful order, a try-out on a commercial basis is a very proper course to take. It is stated that the new plant has been carefully designed and standardized by the Company's Consulting Engineers, and that contracts have been placed with two eminent firms for the building of the retort-settings and the requisite engineering outfit. The estimate for the new plant is £75,000. It is anticipated that by the end of May, the Company will be turning-out between 400 and 500 tons of "Coalite," with other products, per week; and when the whole plant has been completed, they look for a continuous production of 1000 tons per week. Seeing that there are 38 to 40 million tons of coal used per annum in the households of the country, 52,000 tons of "Coalite," which it is calculated the plant will produce per annum, will not go far towards the elimination of the smoke nuisance. There are other low-temperature systems in existence; and no doubt their owners will also be eager to put them to commercial trial. The gas industry, too, is not overlooking the claims of low-temperature carbonization, or the competition to which it is proposed to subject its own solid smokeless fuel.

The Coal Position.

Sir John Hindley, who was Chairman of the Importing Committee and Commercial Adviser to the Mines Department throughout the coal stoppage, in an interview published in the "Compendium," states that the position in the coal trade is extremely peculiar, as it is not easy to cancel or resell foreign coal. Certain collieries, he states, are taking up the line that they have no other outlet for the coal; and therefore the buyers must take their quantities. It is very doubtful whether we shall see the last of the foreign imports before the end of February; and for some weeks to come arrivals must be on a pretty big scale, but, of course, week by week on a descending one. Sir John believes that, once we can get clear of foreign coal, prospects are quite good; but, meantime, he is afraid we are going to see a good deal of idle time at the pits, owing to lack of adequate transport facilities. Unquestionably, stocks of coal in this country and abroad are very low, and in many cases nearly exhausted. This fact, together with the view generally held that the trade outlook is brighter, will mean that there are better times ahead for the coal trade. But Sir John urges that we must not be too optimistic about it. There are some who are rather inclined to exaggerate the prospects; and he, for one, does not anticipate anything in the nature of an immediate boom.

Rebuilding Trade Union Funds.

The trade unions of the country are seriously pondering over the fearful waste of their funds which occurred through the devastating operations of the general strike and the coal stoppage last year. Some of them are contemplating a levy for the purpose of rebuilding the reserves which were squandered. In the case of the railway men, the Executive Committee of the "N.U.R." have decided to inflict a levy of 3d. per week on the whole of the membership for a period of twelve months from Jan. 1. It is stated that this action has been taken in order to restore the finances of the Union, which suffered considerably from the effects of the prolonged stoppage in the coal industry. We rather fancy the general strike had also something to do with the spending of accumulated money.

Drop in Unemployment.

The registers of the Unemployment Exchanges on Dec. 20 showed a total of 1,309,700 persons unemployed. This was 100,678 less than in the previous week, but 207,300 more than a year ago. The total includes the persons in the mining industry who, at the date of the return, had not resumed work after the dispute, and to whose cases the trade dispute disqualification no longer applies. But it is exclusive of persons in that industry who at the date of the return remained disqualified for unemployment benefit.

SIR DAVID MILNE WATSON, LL.D., D.L.

Last Friday's "London Gazette" contained the list of New Year Honours, including a Knighthood for David Milne Watson, LL.D., D.L., Governor of the Gas Light and Coke Company and President of the National Gas Council—a well-merited recognition of vital work for the nation.

AN ACKNOWLEDGMENT.

Sir,—May I be allowed to use your columns to thank my many friends in the gas industry for their congratulations and kind messages.

I hope to reply to them individually in a few days.—Yours very truly,

DAVID MILNE WATSON.

The Gas Light and Coke Company,
Horseferry Road, S.W.,
Jan. 4, 1927.

A Whessoe Record.

Particular interest attaches to the advertisement of the Whessoe Foundry and Engineering Company, Ltd., which appears in our current issue. The firm's announcements and the slogan "'Whessoe' for Gas-Works Plant" have long been familiar to our readers; while the Company's specialities in that direction—gasholders, purifiers, condensers, scrubbers, &c.—are very well known. This week's advertisement, however, harks back to 1845, and indicates that "Whessoe" were actively associated with the early developments in railways. The illustration is of the "Derwent" locomotive built at the Whessoe Foundry for the Stockton and Darlington Railway. "Derwent" customarily occupies a position of honour at Darlington Station; but in the Railway Centenary Celebrations of 1925 it became a thing of life again, being once more run under its own steam. "Whessoe" no longer build steam locomotives, though they turn out cast-iron segments for the tunnels and shafts of "tube" railways. Reference is made to an unbroken record of service now approaching 140 years—a record of which the firm are justly proud. One wonders what would be the feelings of the pioneers of this successful business could they but see, in the greatly extended and essentially modern Whessoe Works of to-day, how admirably succeeding generations have carried on the traditions laid down in the far-off days of the eighteenth century.

PERSONAL.

PRESENTATION AT DUNDALK.

"Goodwill in industry" is to be the slogan for the year 1927; and ceremonies such as that which took place at the Dundalk Gas-Works on Friday, Dec. 24, do much to foster the spirit of the slogan. Mr. George Airth, the Manager of the Dundalk Gas Company, was obviously surprised to find all the employees present when he was summoned to the retort house on Christmas Eve.

Mr. Copas (foreman plumber), addressing those present, said that they must all be aware of the troubled and anxious time Mr. Airth had had during the recent coal strike, not only to keep his own men employed, but also to ensure that the people in Dundalk, who depended on the gas-works for light and heat, were not disappointed. Mr. Airth had travelled many miles to get the coal necessary to keep the works going, and they were all sorry when he became ill as the result of the strain and overwork; but they were glad to know that he was now better again. Labour troubles had been few and far between at the Dundalk Gas-Works, and that was to a great extent due to the fact that every workman knew he could take any grievance or complaint direct to the Manager, and be sure of a hearing and a "square deal." Mr. Scott (carbonizing plumber), in associating himself with the presentation, said that, though he was comparatively a newcomer to the works, he was glad of an opportunity of thanking Mr. Airth for the many acts of kindness he had received from him, in helping him over difficulties. Mr. Copas then called on Mr. Williamson (works foreman), who, in a few well-chosen words, asked Mrs. Airth to accept from them as a practical token of their regard a handsome silver tea service, while to Mr. Airth he presented a solid oak smoker's companion, complete with everything a smoker could desire.

Mrs. Airth, in reply, thanked the workmen for their kindly thoughts towards herself and her husband, and hoped that they would always get along together as happily.

Mr. Airth said the presentation had come to him as a complete, but agreeable, surprise. Some of them had worked together for nearly 27 years. There had been occasions when little differences had arisen; but, like a good husband and wife, who occasionally had a little "tiff," they thrashed all questions out, and became afterwards, if possible, better friends than ever. He had to hold the scales impartially between the Company and the men; and the latter, by their presentation that day, acknowledged that he had done so to the best of his ability. The Company recognized that the workmen were worthy of their wages, and did all in their power to render the work as light as possible—thus making a full contribution towards assisting them in their efforts to work harmoniously together. The workmen, on their part, satisfied him, and so made his work easier. The gas industry was only in its infancy; but gas was used in over twenty thousand industrial processes. Surely Dundalk would, with the revival of trade and the increasing goodwill of the community, get more of these, and become a greater town than before, so that all could be still prouder of it than they had been in the past. Great Britain, in spite of the industrial depression, used 40 p.ct. more gas in 1925 than before the war. He hoped that within a few years it would be necessary for the Dundalk Gas Company to increase the size of their works, and thus employ more labour. They had no cause to be downhearted.

Three hearty cheers for Mr. and Mrs. Airth were given; and the men then went on holiday.

Mr. W. R. HERRING, M.Inst.C.E., is shortly leaving for Johannesburg, to assist the Council to adjudicate upon the tenders for the construction of complete new gas-works recently advertised for in the "JOURNAL." Mr. Herring expects to be back in England by March 25.

Mr. RUPERT H. SAUNDERS, Assistant to Mr. S. O. Stephenson, Engineer and General Manager to the Worthing Gas Light and Coke Company, has been appointed Assistant Manager to the Slough Gas and Coke Company.

After 25 years' successful service as Gas Engineer and Manager to the Oldham Corporation, Mr. TIM DUXBURY has decided to retire from this position he has so ably filled, and to join his youngest son, Norman, in his business as coal, coke, and general gas-works merchant. Mr. Duxbury feels that his son's business is such as to warrant his retirement, in order to extend it; and he intends to devote much of his time to gas-works plant, in addition to coal and coke. He will also carry on some consulting work. Mr. Duxbury has served 45 years as a corporation official, during which period (after completing his articles with his brother, the late Mr. Thomas Duxbury, at Darwen) he spent three years with the late Mr. Isaac Carr, as Chief Assistant at Widnes, eleven years as Engineer and Manager to the Middleton Corporation, and then a quarter-of-a-century at Oldham. The best wishes of a large circle of professional friends will accompany him into his new sphere of activity.

Mr. HENRY LEACH, Superintendent Gas Inspector under the Bradford Corporation, is about to retire, after 37 years' service. At the Town Hall on the evening of Dec. 31, he was presented by his colleages with a mahogany timepiece and a meerschaum pipe; the presentation being made by Mr. Illingworth, Assistant Superintendent.

Mr. WILLIAM MATHIESON, of Glenburn, Horsforth (Chairman of Messrs. Wilsons & Mathiesons, Ltd., and of the London Scottish Foundry, Ltd., both of Leeds), and his wife celebrated their Golden Wedding on Dec. 29. Mr. Mathieson is still actively associated with the works, and visits them daily. He has long been keenly interested in means for co-operation between employers and employees. During Christmas the oldest employee of the two firms handed to him, on behalf of the combined staffs and workpeople, an illuminated address; and a set of dressing table crystal glass was presented to Mrs. Mathieson.

OBITUARY.

After a long illness, the death has taken place, at the Sanatorium, Ashover, of Mr. ARTHUR T. BUXTON, only son of the late Mr. Thomas L. Buxton, of Rolleston, at the age of 37 years. He was born and educated in Burton-on-Trent, and was later employed at the Burton Gas-Works, where he became Assistant Manager. His health was never good; and he was not for that reason able to engage in many public activities.

The death occurred on Dec. 30 of Mrs. ADELAIDE MARSLAND, widow of the late Mr. John Marsland, who for many years was Manager of the Sowerby Bridge Gas-Works. Mrs. Marsland was active in local social, political, and religious life, and had been a member of the Halifax Board of Guardians as a Sowerby Bridge representative.

News will be received with great regret of the death of Mrs. J. A. DRAKE, which took place at her residence, "Heath Lodge," Halifax, on Monday, Dec. 27. Her late husband, Mr. John Armitage Drake, J.P., was head of Messrs. Drakes, Ltd., of Halifax. The only surviving son is Mr. J. Wilfrid Drake, the present Chairman and Managing Director of the firm; his elder brother, Mr. W. Armitage Drake, who succeeded his father as Chairman and Managing Director, having died in January, 1921. Mr. W. A. Drake left three sons, two of whom are at present associated with Mr. J. Wilfrid Drake in the business.

FORTHCOMING ENGAGEMENTS.

[*Secretaries of Gas and Kindred Organizations are asked to assist in making this diary of events as complete and useful as possible by sending the earliest intimation of all meetings.*]

Jan. 7.—INSTITUTION OF MECHANICAL ENGINEERS.—Informal meeting, to discuss "Developments in the Carbonization of Coal," to be introduced by Dr. C. H. Lander, 7 p.m.

Jan. 8.—WALES AND MONMOUTHSHIRE JUNIOR GAS ASSOCIATION.—Visit to the Crindau Works of the Newport (Mon.) Gas Company. Paper by Mr. C. B. Felton on "Dry Meters."

Jan. 11.—NATIONAL GAS COUNCIL.—Meeting.

Jan. 11.—FEDERATION OF GAS EMPLOYERS.—Meeting.

Jan. 14.—CHEMICAL ENGINEERING GROUP OF THE SOCIETY OF CHEMICAL INDUSTRY.—Meeting at Burlington House, Piccadilly, W. 1. Paper by Mr. J. Ainger Hall, B.Sc., &c., on "Thermo-Electric and Resistance Pyrometry in Industry."

Jan. 15.—LONDON AND SOUTHERN DISTRICT JUNIOR GAS ASSOCIATION.—Visit to the East Greenwich Works of the South Metropolitan Gas Company.

Jan. 15.—SCOTTISH JUNIOR GAS ASSOCIATION (WESTERN DISTRICT).—Meeting in the Royal Technical College, Glasgow. Paper by Mr. A. Kay, on "Gas-Fired Hot Water Systems."

Jan. 15.—YORKSHIRE JUNIOR GAS ASSOCIATION.—Meeting.

Jan. 20.—MIDLAND JUNIOR GAS ASSOCIATION.—Meeting. Paper by Mr. A. R. Myhill on "Notes on the Operation of Gas Producers."

Jan. 22.—SCOTTISH JUNIOR GAS ASSOCIATION (EASTERN DISTRICT).—Visit to Messrs. R. Laidlaw & Sons, Ltd., Edinburgh.

Jan. 26.—SCOTTISH JUNIOR GAS ASSOCIATION (WESTERN DISTRICT).—Visit to the "Glasgow News and Daily Record" Office.

Jan. 28.—LONDON AND SOUTHERN DISTRICT JUNIOR GAS ASSOCIATION.—Meeting at the Westminster Technical Institute. Paper by Mr. A. Hugh Seabrook on "Gas-Works and the Production of Light, Heat, and Power."

Feb. 16.—INSTITUTION OF GAS ENGINEERS AND BRITISH COMMERCIAL GAS ASSOCIATION.—Joint Conference on "The Inspection and Maintenance of Consumers' Appliances," at the Institution of Mechanical Engineers, Storey's Gate, S.W.1.

March 9.—JUNIOR GAS ASSOCIATIONS.—Education Conference.

March 16.—BRITISH COMMERCIAL GAS ASSOCIATION.—Midlands District Conference at Smethwick.

INSTITUTION OF GAS ENGINEERS.

Jan. 10.—Emergency and Finance Committees.

Jan. 11.—Advisory Committee on Education.

ELECTRICITY SUPPLY MEMORANDA.

THE Electricity Supply Act is now in existence, but enthusiasm for it in the electricity industry is no more visible than it was before. The industry regards it as something which has been forced upon it, without any adequate investigation from its point of view, and without that co-operation which might have been fostered by the Government. There would then have been a better spirit, had an agreed scheme resulted, than that which now prevails. Whatever benefit may come along in the way of reducing generation costs (as distinct from heavier distribution costs, which cannot fail to develop through the capital and upkeep expenditure involved), our electrical friends mournfully say cannot accrue for some years, and meanwhile capital expenditure will be going on at an augmented rate, altogether out of proportion to the rate of consumption expansion. Those popular writers who thought that, with the passing of the Act, some miracle would at once happen, are now scanning the horizon for any evidence of it coming to pass. But they cannot see any signs of their expectations rapidly materializing. They are alone. The sensible men of the electricity industry are issuing warnings regarding the public being misled, and placing their expectations at too high a level. However, now the Act has passed, controversy has ceased. It is no good continuing it; and the feeling is that now—whether the measure operates for good or ill—the best must be made of it. Whether that "best" will be of advantage to the electricity industry, only time can show, though doubts do not lessen. Another point of interest is that, with the end of the old disastrous year and the opening of the new one, the "Wiring of Britain's Homes Campaign" is about half-way through its course. We admit that it started at a bad time, when many undertakings had to raise their charges, owing to the increased cost of coal. During that period, electricity undertakings have done good business in electrical radiators, just as gas appliance manufacturers and gas undertakings have done in gas heaters of many descriptions. The increase in electric fires has been mainly due to the coal stoppage, and not to the campaign. With coal even at the present price, it is cheaper to heat by it (as it is cheaper to heat by gas or coke) than by electricity. The coal stoppage must have its due share of credit for assisting electric heating, though it may be only temporarily. Concerning the campaign, it is learned that there are now 101 circles in existence in the electricity industry, looking after the development of methods to boost the use of electricity in their respective regions; and the number is increasing weekly. London and the Home Counties have been backward in this particular development of propaganda work; but it is said there is new life among the undertakings in that particular territory, although the co-operative activities are not of the same excellent brand as in many provincial centres. Our electrical contemporaries report that there has been a meeting with some forty supply engineers in the area, which, it is stated, has now some 22 circles in existence, with demonstration houses or exhibitions. On the occasion, a resolution was passed suggesting that all supply engineers in the area where no circles have been created should convene or form such circles immediately. Alternatively, if co-operative circles are impossible, the supply authorities are urged to push the campaign with their own staffs. With the end of the Christmas festivities, the campaign, it is hoped by the promoters, will be intensified in all parts of the country, and the number of electric demonstration houses be increased. There were never so many of these in the country as at the present time.

Activities.

Wiring, Hiring, and Selling.

In the "Memoranda" for Dec. 22, we gave, from the report of the Electricity Commissioners for the year ended March last, some particulars as to the progress of the electricity supply industry. Among other information in the report are details as to the loans sanctioned for works consequent on a change-over of system, wiring consumers' premises, and the purchase of domestic electrical apparatus for hiring out. All along the line, the loans have increased as would be expected in any progressive industry. Those for changing-over amounted to £75,153; for wiring consumers' premises, to £50,002; and for the purchase of apparatus for hiring-out, to £83,793. In this connection, we trust that there is compliance with the requirement that the outgoings shall be covered by the revenue, so that, on balance, there shall be no loss. There is knowledge that this has not always been the case; that in certain instances maintenance costs, for example, are muddled away among the general expenses of maintenance in the distribution department. It is also obvious that in some housing schemes, having regard to the prices of current to ordinary consumers, the "all-in" charges are insufficient to recoup all outgoings for appliances and energy. The Electricity Commissioners ought carefully to see that the law in regard to all outgoings for appliances being balanced by revenue is obeyed by all undertakings. Perhaps, in view of the new Act, greater care will be exercised in this respect in future. It may be anticipated that the loans for wiring consumers' premises, and for the purchase of apparatus for hiring-out, will increase considerably in the immediate years, in view of the clause in the new Act which invests municipal authorities generally with liberty in respect of wiring, hiring, and selling, which has been enjoyed by few municipal electricity concerns in the past. Another piece of information is that, in the view of the Electricity Commissioners, the tendency to reduce prices for electricity is reflected in the applications received for a revision of maximum prices; the most important cases being those in which a downward revision is sought.

Gas Companies and Electricity Supply.

Now that the Government electricity supply scheme has been crowned by the necessary legislative powers, it may be that many more gas undertakings in areas not yet supplied with electricity will be considering the policy of applying for Special Orders for this purpose. In their annual report, the Electricity Commissioners refer to the Statutory Gas Companies (Electricity Supply Powers) Act, 1925, which enables gas-supply authorities to apply for Special Orders under the Electricity Supply Acts. They state that they prepared draft rules of procedure with respect to the applications for such Orders under this Act, which were based on the rules of 1920. Subsequently, provisional rules were presented to Parliament; but though no representations were made during the prescribed period of 40 days, the Commissioners decided to defer making statutory rules for the time being, in order to ascertain, through the operation of the provisional rules, whether any variation might be desirable. These regulations were published in the "JOURNAL" for March 10 last (pp. 630 and 631). In view of the new Act, and the gradual development of the scheme of generation concentration, gas undertakings in areas at present innocent of a supply of electricity may consider the question of becoming local distributors—purchasing the necessary supply in bulk from the nearest power station, unless they can prove they can themselves generate more cheaply.

Expenses of the Electricity Commissioners.

The estimated expenditure of the Electricity Commissioners for the year ended March last was £56,450; but it is seen by their annual report that the actual expenditure was £48,411. Their receipts were estimated at £1750; but they reached £4313. The contributions made by authorized undertakers totalled £53,000. With the coming of the new Act, we may not only witness the ascent of the expenses of the Commissioners, but there will be, in addition, the costs of the Central Board and of their staff. New controlling machinery and extensions of the work of existing machinery cannot well be instituted without incurring much larger outlay.

Thermal Storage for Room Heating.

Among the exhibits in an all-electric house which has been equipped at Harrogate is an electric thermal storage system—the invention of Mr. George Wilkinson, the Electrical Engineer—for the automatic heating of the dining-room, and providing a hot water supply for the house. A photograph shows something in the nature of a sideboard, which contains the thermal storage apparatus. The panels of this piece of "furniture" are of brown cork; one of them carrying a thermometer which exhibits the temperature of the water. In this casing is a rectangular steel tank of 50 gallons capacity; the water content of which is covered with oil to prevent evaporation and oxidization of the tank. A metal thermostat is used for controlling the temperature of the water, and this cuts off the heating current below boiling-point. A small fan (utilizing only about 40 watts) propels air through the heater; and it can be started and stopped automatically by a thermostat in the room, so maintaining uniformity of temperature, and preventing waste of heat. Normally, the storage heater is on an alternative circuit to the heating and cooking circuit; and, when the latter is broken at night, the operation automatically puts on the thermal storage circuit. The reverse occurs in the morning; when the heating and cooking circuit is put on, the storage circuit is broken. Thus no current is used by the thermal storage apparatus other than during bedtime hours. Should, however, an abnormal amount of water be required, the apparatus can, by means of a switch, be supplied from the heating and cooking circuit at the cooking rate during the day. The night hours' current, it is suggested, can be supplied at coal cost only, *plus* a reasonable profit. It is submitted that in this case the operation is competitive with coal or gas for heating, and much more convenient and safe. Of course, this submission depends very largely on the charge for the coal or gas. If the electricity industry takes up the extraordinary attitude that water heating can be done on the basis of coal cost only for electricity, *plus* a "reasonable" profit, there is not the slightest reason why the gas

industry should not also adopt a special tariff for the same purpose. But there is little necessity for doing so, in view of the high efficiency obtained from present methods of heating water by gas, and the relative heat value supplied for a given payment. The fact that current for water heating must be supplied at a lower cost than for ordinary room heating and cooking tells a tale upon which it is unnecessary to comment.

Electric Wires and Gas-Pipes.

In the "Memoranda" on two recent occasions, reference has been made to the danger of electric wires being placed in proximity to gas-pipes. Another case, we find from the "Western Mail," has occurred at Newport (Mon.). This instance, it would seem, rather illustrates the tendency on the part of fire brigades and police to assume that, because a gas-flame is seen, gas is responsible for the mischief; and this erroneous impression is conveyed to representatives of the Press. The first allusion to the matter was in the "Western Mail" for Dec. 9. It stated: "A slight outbreak of fire occurred at 32, Ruperra Street, Newport, on Wednesday, at the premises, occupied by Messrs. John Moses, Shipbrokers. The fire is alleged to have been occasioned by a leakage of gas; and Driver Scott of the fire brigade was gassed while assisting to extinguish the blaze. He was removed to the hospital, where it was found he was not seriously poisoned. Little damage was done to the premises." In the following day's issue, Mr. J. H. Canning, the Engineer and Manager of the Newport (Mon.) Gas Company, corrected the allegation that the fire was caused by a leakage of gas. Having acknowledged that the "Western Mail" usually attains a high standard of accuracy, he suggests that the reporter has on this occasion been misinformed, and asserts that "the primary cause of the fire in question was the fusion of an electric cable close under the outside wall of the office, which melted a hole in the gas-pipe, and ignited the gas issuing therefrom." We believe there has since been admission that this statement is correct.

Misbehaviour.

As usual at Christmas time, there have been several fires, and in most cases the cause is reported to be "unknown." On Christmas Eve, while fixing decorations in the restaurant of the Waldorf Hotel, an electric wire fused, and set light to the over-hanging garlands which were being placed along the glass ceiling. Fortunately, very little damage was done. From Allahabad comes the information that a fire which broke out at the British Legation in Kabul on Dec. 22, is "believed" to have been due to the fusing of an electric wire. The main building was completely burned-out. On the last day of the old year, the Wesleyan Church at Colchester was reduced by fire to a mere shell. The trouble started in the roof. There had been no fires in the church during the week; and it is "supposed" the disaster was caused by electrical fusion.

JOHN WILSON BROADHEAD.

AN APPRECIATION.

By R. G. SHADBOLT.

John Wilson Broadhead has gone to his long rest. It is a sad thought, and one that, for some time to come, will be repeatedly impressed upon the minds of those who came often in contact with him; for his personality, driving force, and manifold activities cannot possibly cease so abruptly without leaving many voids which will take considerable time adequately to fill. We are faced by inexorable Nature, to whom all must bend. I confess to an impulse akin to rebellion, at what, to human judgment, appeared to be wanton destruction, practically in his prime, of one who, by his works, thoroughly justified his existence, if ever anyone did; yet such was the malignity of the enemy that he himself longed ardently for release before the end, and we are fain reluctantly to acquiesce. Freshly returned from the scenes accompanying the interment, one is deeply impressed with the universality of the sentiments of affection, respect, esteem, and appreciation displayed towards our departed friend throughout; and the feeling is intensified that here has gone out a vital force from among his fellows.

By his death, a great loss has been sustained, not only by those nearest and dearest to him, and those who may count themselves among his personal friends, but also in a very large degree by the entire gas industry, to which he devoted the major portion of his life's energies. John Wilson Broadhead was what one may justly term a natural engineer; and this natural trend was most fittingly supplemented by subsequent training and experience, such as eminently fitted him to grapple with the multitudinous problems involved in the complex nature of the business he built up. Add to this a highly-developed commercial faculty, with an astute sense of what we know as "the long view," and we have the outstanding characteristics of the business side of the man who has played a most important part in the evolution and development of the gas industry in modern times. The names of "Dempster, Elland," and "Broadhead" have long been synonymous; and the town of Elland may count itself fortunate in having so long possessed a citizen who contributed so largely to its progress and well-being.

Briefly stated, his career is expressed in four phases: His preliminary training with Messrs. W. C. Holmes & Co., Huddersfield; continued training at Messrs. R. Dempster & Sons, Elland, at a time when the fortunes of that firm were far from those of to-day; a further and wider experience with an offshoot of the old Elland firm, who sought, and successfully established itself in, pastures new; and his eventual return to take over the management at Elland, when the affairs of the old firm were at a low ebb. This was some 34 years ago; and it was not very long before he became Managing Director, a position he held until death intervened. It was at the time of his return to Elland that I first made his acquaintance, owing to the fact that a contract then just placed with the Elland firm by the Company I at that time served; and incidentally the first engineering contract for which I was responsible as "Chief," happened also to be the first contract Mr. Broadhead was called upon to carry out in his new capacity at Elland. This led to an early appreciation of the man and his work, and resulted in a personal friendship broken only by death. Since those early days, the history of the man and his work has been one of continual progress, until, at times, one wondered to what heights he might not attain.

As has been stated elsewhere, he had the faculty for attracting to himself a staff of assistants who served him with loyalty and zeal, and whose work he was not slow to appraise and recognize. As one indication of the developments made, it may be stated that the staff alone to-day is equal in numbers to the total of employees of all kinds engaged at the time he took over the management, while the total number of employees has become nearly ten times that of those engaged at the earlier date. The works to-day are in themselves a standing testimony to the magnitude and efficiency of present-day operations, as expressed times innumerable by visiting engineers.

[*Elliott and Fry, Ltd.*

JOHN WILSON BROADHEAD.

Over the period under review, research, investigation, and improvements of practically every kind of gas-works plant, from coal handling to gas storage, have been effected. Always looking ahead, our friend spared no time, effort, or money in projecting investigations into whatever, to his mind, appeared at all likely to yield improvements in design, construction, or operation of gas-works plant. Indeed, at times it would almost have appeared that some of the objectives sought were still a long way out of sight. Anticipation was not the least of his

attributes. Hydraulic and chemical plant likewise received their meed of attention; and, taken altogether, there are many gas and other works throughout this country, the Colonies, and abroad that bear the impress of his hand, and will commemorate him in service for many years to come. His energies, however, were not confined to the gas industry; for, as the capacity of the Elland works grew under his hand, he cast around in other directions, and many substantial plants for various purposes have been constructed and erected under his guidance for electricity undertakings, collieries, iron works, cement works, and power plants of great variety, for all sorts of general industries.

But to revert to our own industry, he was, to my mind, an outstanding example of the increasingly important part played in it by the technical contracting engineer. We are, perhaps, prone to stint this class of technician of their due meed of recognition. This lack of recognition of the contracting technician was, methinks, the main cause of the formation of the Society of British Gas Industries; and no more consistent founder and supporter of that successful organization was to be found than "J. W. B." Little wonder that he duly became Chairman of that body, and remained Chairman of one of its Sections to the end of his career.

He was a many-sided man, animated by a laudable ambition to be of service to the community in which he more particularly moved and lived. He never saw his way to take up municipal work, although closely allied in personal friendship with some who revelled in it; but he found many channels of public usefulness, which stand duly accounted in local records. In referring to his local activities, I use the term in a wider sense than the purely parochial; and in these spheres of activity his positive characteristics made him a vital force, even as in business affairs. His record of national effort during war-time connotes high endeavour. In fact, whatever his hand found to do, he did it with his might. His was a full and strenuous life!

He may justly be termed a most human man, and his strong side was counterpoised by what we choose to term the weaker characteristics. Underneath the business man and the disciplinarian lay the tender heart and the benevolent nature. Distress and sorrow, once realized, made a strong appeal to him. He loved his gardens and his flowers. Children were readily attracted by his personality; and there are grown-ups to-day who recall with pleasure little attentions and considerations shown to them in childhood by him. On the other hand, he could be severe. He made a doughty opponent, but could take a reverse philosophically. I have never known him to bear malice. His benevolent instincts found an acceptable outlet and expression in Freemasonry; and no one can truly estimate the full value of his efforts for others through this particular channel. He did not, however, confine his benevolence to this direction alone. It operated in many ways known only to himself; and as his life advanced I noted in him a growing consideration for others.

As he worked, so he played; and he was a participator in, as well as a supporter of, a variety of games and sports. He was a firm believer in the old adage that "All work and no play makes Jack a dull boy," as applied to his employees, as well as to himself, and was a most enthusiastic supporter of the successful Sports Club of the works employees. His last public utterances were made at the annual sports of this Club in July last. One other glimpse of his sporting side. He took a constant interest in the "Sport of Kings;" and the initiated will understand me when I say he dearly loved to "have a little bit on." One great regret to him, in the earlier part of the latter stage of his illness, was that it looked like depriving him of his beloved golf; and when speaking to me in this strain, he added: "But I'll take you down at billiards next time you come." Alas! the opportunity never arrived.

Socially, he had a large circle of friends, and made an exemplary host. He changed his residence from Elland to Honley some few years ago, that he and his might enjoy the amenities of more picturesque surroundings. The setting chosen was well deserved and enjoyed. But "man proposes" only, and to our minds he was cut short all too soon, though not before he had established further friendships and inspired an atmosphere of respect and esteem around him. Nevertheless, as can readily be understood, his heart was in Elland; and it was at his own request that he was laid to rest in the town of his adoption, and on the scene of his triumphs. "Requiescat in Pace!"

His handiwork permeates a great industry, with ramifications radiating in many directions. These are his monuments; and they will long survive him. Through them, "he being dead still speaketh," for, as was well said by one of old: "All things done live; and nothing done dieth." His whole life is summed up in "*things done.*"

RECOVERY OF SULPHUR FROM GAS.

In Brennstoff-Chemie for Oct. 1, Fischer and Dilthey, of the Kaiser Wilhelm Coal Research Institute, Mülheim, discussed the possibility of an alternative to the usual method of sulphur purification by means of oxide of iron. This process, they maintain, has the disadvantage that the sulphur is recovered in a form which is of little commercial value, and it would therefore be a considerable gain if a method could be found of converting the sulphuretted hydrogen of the gas direct into pure sulphur.

Confining themselves to the possibilities of solutions of metallic salts, the authors consider those of the copper group to be the most interesting, since, even in the cold state, these are capable of removing the whole of the sulphuretted hydrogen from the gas, with formation of copper sulphide. Raschig discovered that copper chloride reacts further with sulphides of copper, according to the equations—

$$CuS + CuCl_2 = Cu_2Cl_2 + S$$
$$Cu_2S + 2CuCl_2 = 2Cu_2Cl_2 + S.$$

In his work, Raschig took advantage of the solubility of Cu_2Cl_2 in NaCl and HCl solutions, and recognized the quickening effect of heat and of increased $CuCl_2$ concentration on the dissociation of the copper sulphide. The action of sulphuretted hydrogen on solutions of copper salts has recently been investigated by Gluud and collaborators. He succeeded in effecting the direct oxidation of the sulphuretted hydrogen to sulphur by means of copper salts, with the reduction of the latter from cupric to cuprous salts. The precipitates, however, apparently still contained over 20 p.ct. of copper when using chloride solutions, and over 60 p.ct. with sulphates. Gluud also established the presence of several modifications of the copper sulphide. As characteristic of the freshly precipitated sulphide, he found it was readily oxidized to sulphur and copper salt by air.

The direct recovery of a high percentage sulphur by means of copper salts in solution had not previously been mentioned in the technical literature. Even the patents taken out in connection with Gluud's findings mostly function on the principle of precipitating the copper sulphide in ammoniacal solution as CuS, and then oxidizing it with air. The authors of the present article, however, succeeded in obtaining sulphur in yellow crystalline form, and of a high degree of purity, by dissolving copper chloride in a concentrated solution of sodium chloride, and working at high temperatures. They established the fact that the purity of the sulphur increased in proportion to the concentration of copper chloride in the solution and to increasing temperatures; a 10 p.ct. solution and a temperature of 70° to 80° C. appearing to be as good as any. The re-conversion of the Cu_2Cl_2 resulting from the sulphur separation was effected by air injection. High temperatures favoured this reaction, whereas high copper chloride concentration hindered it. With a 10 p.ct. copper chloride solution, the Cu_2Cl_2 is fairly easily regenerated to $CuCl_2$, but with a 20 p.ct. solution it is much more difficult.

It is suggested that, on the basis of these investigations, a process might be evolved in which sulphur separation is effected, with reduction of $CuCl_2$ to Cu_2Cl_2 in one phase, and regeneration of the Cu_2Cl_2 to $CuCl_2$, by means of air injection, in a second phase. Such a process would be applicable, of course, principally to gases with low sulphuretted hydrogen contents.

Erratum.—In our report of the discussion on the paper on "Dry Gas Meters" read by Mr. A. Knight before the Midland Junior Gas Association on Dec. 16 (see "JOURNAL" for Dec. 29, p. 822), there was an error in the remarks of Mr. R. J. Rogers, the Chief Superintendent of the Fittings Department of the Birmingham Gas Department. He was reported as having said: "Experiments made in connection with the stuffing boxes working with mercurial seal had still to be proved in practice; but the arrangement certainly did *not* appear to offer a solution to many of the difficulties arising from leakages." The word "not" should be deleted. As a matter of fact, Mr. Rogers recently tested a meter fitted with mercurial seals; and while at the moment they appear to be perfectly satisfactory, and to offer a solution to the difficulty of leakages, before a definite conclusion can be arrived at, it will be necessary to carry out a prolonged test on meters on consumers' premises.

GAS ACTS FOR 1926.

(Concluded from Vol. 176, p. 819.)

LONDON COUNTY COUNCIL.

A General Powers Act of the London County Council contains a section relating to the sale of coal. This section was opposed during the passage of the Bill through the House of Lords; and, as a result, certain amendments were made of the wording as originally drafted. In the Bill, the section opened: "It shall not be lawful for any person to sell coal in the county containing an undue proportion of slate or slack or incombustible matter," under liability to a penalty not exceeding £10. The clause now reads:

> It shall not be lawful for any person to sell coal in the county containing or having admixed therewith an amount of slack or rock or incombustible matter which, having regard to all the circumstances of the case, constitutes an undue proportion of the total weight sold; and if any person contravenes the provisions of this sub-section, he shall be liable on summary conviction to a penalty not exceeding £10.
>
> Provided that a person shall not be liable to any penalty under this sub-section if he proves to the satisfaction of the Court having cognizance of the case that the coal sold by him was sold for purposes other than household or domestic purposes or that he had reasonable grounds for believing that such coal was purchased for use for any such other purposes.
>
> Provided also that in any case in which proceedings in respect of a sale of coal are instituted under this sub-section in consequence of a complaint received from the purchaser of such coal, the provisions of this sub-section shall not be deemed to have been contravened unless within a reasonable period after the delivery of such coal to the purchaser he complains in writing to the Council or to the Corporation (as the case may be) that such a contravention has been committed.

Power is given to stop vehicles and enter premises for the purpose of inspecting and taking samples of coal, and to require the owner or person in charge, or the occupier of premises, to furnish reasonable information with respect to such coal. A new sub-section has been inserted to apply to coal upon railway premises. This is as follows:

> In the exercise at, or upon, any railway premises of the powers conferred upon him by this section any duly authorized officer or servant of the Council or of the Corporation shall conform to such reasonable requirements of the railway company owning or using such premises as are necessary to prevent the working of the traffic thereat being obstructed or interfered with; and the railway company shall not be liable for any accident or injury which may happen to any such officer or servant while on the railway company's premises, nor shall they be required to afford particulars or information with respect to coal other than the name and address of the person occupying that part of the railway company's premises on which the coal may be, or in case of coal carted direct from truck the name and address of the consignee of such truck.

Sub-sections with regard to power to make by-laws which appeared in the Bill are omitted from the Act. [*Parliamentary Agents: Messrs. Dyson, Bell, & Co.*]

MYNYDDISLWYN URBAN DISTRICT COUNCIL.

This is another General Act, one part of which relates to the gas undertaking of the Mynyddislwyn Urban District Council. The Council, whose area is in the county of Monmouth, had in the Bill drafted a section allowing them to charge for gas supplied through a prepayment meter a minimum sum in each quarter (including therein the charges for the hire of any prepayment meter and fittings) not exceeding 7s. 6d. in respect of the quarters ending on Dec. 31 and March 31, and 5s. in respect of the quarters ending on June 30 and Sept. 30. In the Act, this has been altered to a charge not exceeding 5s. in any quarter. No substantial change has been made in the other clauses, which are of a usual character. [*Parliamentary Agents: Messrs. Rees & Freres.*]

NEWCASTLE-UPON-TYNE CORPORATION.

An Act to confer further powers of various kinds upon the Newcastle-upon-Tyne Corporation contains, in the part relating to streets and buildings, a section which, as the result of an agreement between parties concerned, has been altered from the form in which it appeared in the Bill. It is a section imposing restrictions on rights of breaking-up streets in the city; and, as appearing in the Act, it provides that the Corporation, before commencing any work involving the closing of vehicular traffic of any street in the city, either absolutely or to the extent of one-third or more of the width of the carriageway, shall give three months' notice of their intention to execute such work to all undertakers having statutory powers to break-up the street, and that when the work has been executed by the Corporation it shall not be lawful for the undertakers, within twelve months of the completion of the work, to break-up the street without the consent of the Corporation. Such consent shall not be unreasonably withheld; and the Corporation may attach to any consent such conditions as may be reasonable with respect to the times at which, and the period within which, the work of the undertakers shall be executed and completed. It is provided that, in respect of any work executed by any undertakers which, but for the provisions of this section, would have been lawful, the undertakers shall not be deprived of any right or immunity as between themselves and any person other than the Corporation to which they would have been entitled. Disputes or differences are to be referred to arbitration. In a further proviso it is stated that nothing in the section shall prevent any undertakers from carrying out emergency works, or works necessary to enable them to perform their statutory duties, or their obligations under contracts subsisting at the date of the Corporation's notice, in default of which they would be liable to penalty or damages. Neither are they prevented from making, altering, repairing, or disconnecting communication pipes or service connections, laying service lines between premises and distributing mains, or altering, repairing, or disconnecting service lines.

Another part of the Act contains sections to the effect that where coke is sold by weight in quantities exceeding 2 cwt. the seller shall deliver to the purchaser a weight ticket. The seller or person in charge of any vehicle from which coke is sold by weight in quantities exceeding 14 lbs. shall carry on such vehicle a weighing instrument or suitable measure of a type approved by the Corporation. Quantities between 14 lbs. and 2 cwt. are to be sold or offered for sale in sacks with a metal label affixed to the top of each indicating the correct legal weight, or measure of coke therein. Purchasers of coke by weight, as well as inspectors, may require the weighing or re-weighing of coke and vehicles carrying it. [*Parliamentary Agents: Messrs. Dyson, Bell, & Co.*]

SWINDON CORPORATION.

Two gas sections are contained in the Swindon Corporation Act. There is provision as to gas meter testing, in a clause authorizing the Corporation, at any time after the passing of the Act, to adopt, by resolution, the Sale of Gas Acts, 1859 and 1860. The other section is to the effect that "every person who negligently or wilfully breaks, throws down, or otherwise damages any public lamp or lamp-post . . . shall make full compensation to the Corporation for the damage done, and the amount of such compensation, to an amount not exceeding £20, shall be recoverable summarily as a civil debt." [*Parliamentary Agents: Messrs. Martin & Co.*]

ORDER CONFIRMATION ACT.

DUNDEE CORPORATION.

The Dundee Corporation Order Confirmation Act confirms a Provisional Order made under the Private Legislation Procedure (Scotland) Act, 1899. It transfers to the Corporation the undertakings of the Dundee Gas Commissioners and the Dundee Water Commissioners. One or two clauses in the Draft Order have been deleted; but the principal provisions remain. By an Act of 1868 the Dundee Gas Commissioners were incorporated for the purpose of supplying gas to the city and suburbs, and places adjacent thereto, with power to levy a gas contingent guarantee rate from occupiers within the city; and in 1894 the Corporation were constituted as Commissioners for carrying the Dundee Gas Acts into execution. It is now thought that it will be of advantage to transfer to the Corporation the undertaking and the powers of the Dundee Gas Commissioners and the Dundee Water Commissioners, and to make provision for the borrowing by the Corporation of money generally, instead of in separate sums under the various Acts. Nothing done under the Act is to affect any annuity granted by the Commissioners under the Gas Acts or the Water Acts. The Gas Commissioners and the Water Commissioners were dissolved on Nov. 15 last. [*Parliamentary Agents: Messrs. W. Robertson & Co.*]

Society of Chemical Industry (Nottingham Section).—At a meeting to be held on Jan. 12, at University College, Nottingham, at 7 o'clock, Dr. King, of H.M. Fuel Research Station, will give a paper on "The Production of Liquid Fuels from Coal." The present position of the country so far as the availability of oil fuel is concerned will be discussed, as also will the methods now before the scientific public. Results will be quoted under the following three heads: (1) Low-temperature carbonization; (2) the hydrogenation of coal by the Bergius process; and (3) the reduction of carbon monoxide for the catalytic production of liquid fuels. In sections 1 and 2, the work of the Fuel Research Station will be particularly described. In the third section, the only results available are those published in the literature of the subject. There will probably be a few lantern slides. Anyone interested in this subject will be welcome at the meeting.

PIPES AND CABLES BENEATH HIGHWAYS.

A paper on the subject of "Mains, Pipes, and Cables beneath Highways" was prepared for the International Road Congress at Milan by Mr. G. P. WARNER TERRY, Barrister-at-Law, Secretary of the British Water-Works Association. It could not, however, be admitted for discussion, as it had not been forwarded to the Central Paris Committee in time for translation and circulation—which it was not possible to do, inasmuch as the paper comments on omissions from the papers already circulated. It is, Mr. Warner Terry says, a little astonishing that, throughout the whole of the comprehensive papers prepared for discussion at the congress, not one single reference is to be found to the all-important question of accommodation for mains, pipes, and cables beneath highways.

EXPEDITING REPAIRS.

The only reference to a smaller aspect of the question appears in the paper written by Mr. Arthur Harrison, Borough Engineer and Surveyor of Southwark, who states: With a view to expediting repairs, the method now adopted in Southwark consists of the use of pre-cast concrete slabs made to a size of 2 ft. 6 in. by 2 ft. by 4 in. deep. These slabs are inserted in the opening; the concrete road being cut back to the size of the slab, and a new slab bedded on rich quick-setting cement mortar placed just above the reinforcement. This method has proved expeditious and quite satisfactory.

LONDON TRAFFIC ACT, 1924.

It is pointed out by Mr. Warner Terry that the problem presented by the subject of his paper is a sufficiently serious one in connection with existing roads and streets, especially in the older cities and towns; and in this country the matter has for some years past been extensively discussed. Owing to the rapid and simultaneous growth both of road traffic and of sub-surface uses, the bodies and authorities possessing rights to open-up roads and streets for the laying of mains, pipes, and cables have found themselves placed in a position of antagonism to the highways authorities, or *vice versa*, so that a sort of controversial duel has been waged between what have been called the "Surface Users" and the "Sub-Surface Users."

So far as London is concerned, the matter was considered by the Royal Commission on London Traffic of 1903-5, whose recommendations were substantially in agreement with the provisions of a Bill deposited by the Corporation of the City of London in 1902; and the majority of the proposals put forward in that Bill have been given effect to, or the requirements have been otherwise satisfied, by the London Traffic Act of 1924. The scope and character of the provisions of this Act, and its successful administration, are to be attributed to Sir Henry Maybury, the Director-General of Roads of the Ministry of Transport, whose genius in regard to highways and traffic problems is universally recognized. A strong Advisory Committee (the London and Home Counties Traffic Advisory Committee) has been set up to consider problems relating to the London Traffic Area, which covers over 1820 square miles, with a population of 8¼ millions. This London Traffic Area is almost co-extensive with the London and Home Counties Electricity District; the latter being some 60 square miles larger.

Under the provisions of the London Traffic Act, a scheme has been evolved whereby London street repairs have been as far as possible systematized, so that they may be carried out by time-table throughout the year. With the object of reducing the inconvenience arising from the carrying-out of street repairs in the Metropolitan area, the Ministry of Transport have issued an Order prescribing the times when highway works involving the closing of not less than one-third of the roadway are to be commenced and completed within the ensuing six months. Drawn up after consultation with the authorities concerned, the time-table becomes binding for all road works; and, subject to certain exceptions, it is provided that no thoroughfare named in a long schedule is to be broken-up within twelve months of the completion of a scheme, without the consent of the Minister. The new regulation, according to the accompanying explanatory memorandum, is made applicable to—

All the more important main traffic thoroughfares within a radius of 2½ to 3 miles of Charing Cross, together with the traffic routes alternative in these main roads.

Certain trunk roads extending radially outwards from the central area.

Roads in the outer parts of the London Traffic Area where acute traffic difficulties are likely to arise.

In drawing up the scheme, care has been taken to ensure that, in all cases where a street is closed for works, a reasonable alternative route will remain open for traffic, and that where undertakers require to carry out works in connection with sewers, water, gas, telegraph, or telephone services, such works are carried out at the same time as the road works. Special regard has been had to the dates of public events.

Restriction on the breaking-up of streets within a period of twelve months after the completion of works is subject to a proviso for cases of emergency; and the scheme does not include street works by public utility authorities or favoured bodies such as the Post Office, the Metropolitan Water Board, &c., as such bodies are not required by the London Traffic Act to submit programmes of the works they propose to carry out from time to time.

Such measures of co-operation between the various bodies breaking-up streets are calculated to reduce the inconvenience to traffic to a minimum. Road authorities and undertakers have agreed to arrange for the work to be carried out continuously by night and by day, so as to reduce the obstructions to traffic to the shortest possible space of time.

SURFACE USER V. SUB-SURFACE USER.

At the Public Works Congress held in the Agricultural Hall in 1925, this subject was discussed in papers submitted by Mr. Rowland Fletcher (Borough Engineer and Surveyor of Smethwick) and Mr. Warner Terry. These papers were noticed in the "JOURNAL" for Dec. 2, 1925, p. 573. Mr. Fletcher wrote feelingly on the many problems and difficulties of a highway surveyor occasioned by the constant breaking-up of his road surfaces by gas, water, and other authorities; while Mr. Warner Terry was able to show that, as a matter both of history and of law, the view that the highway was only for surface users, and that the sub-surface users are trespassers and wayleavers, is utterly wrong. Anyway, the latter says, sub-surface pipes and conduits are a present-day necessity; and if the highway authorities wish to remove them from beneath the roads, they must find adequate accommodation for them elsewhere. Sewers and water mains are essential to modern sanitation; and as the smoke nuisance has been shown to be a direct cause of much serious ill-health of town populations, no obstacles to the greater use of gas and electricity instead of coal will be tolerated by public opinion. There are also telephones and pneumatic tubes.

IS THE MONOLITHIC ROAD A MISTAKE?

After quoting a number of statements and opinions, Mr. Warner Terry says the whole situation makes the plain man-in-the-street wonder whether highway engineers are not on the wrong tack in insisting upon building the monolithic road on a foundation of reinforced concrete over a complex collection of sewers, mains, pipes, cables, valves, boxes, chambers, and other apparatus that must at times be got at for repairs and renewals. Cannot some means be devised for paving the roads with material in segments that could be pulled out and put back again without spoiling the whole surface? Some such method was suggested by Col. C. H. Bressey, C.B.E., Chief Engineer of the Ministry of Transport, in a paper on "Modern Methods of Road Making," submitted to the Surveyors' Institution in December, 1925. Col. Bressey dealt with the new arterial roads, and demonstrated that the need for provision for essential services made it desirable for these to be of considerable width. "Those radiating from the Metropolis might," he said, "well be 100 ft. between hedges. Spacious footways and verges on each side of a carriageway promote the safety of drivers entering from side roads. Although one may assume that in open country the expense of constructing continuous subways under new roads would be entirely unjustified, the same remark does not necessarily apply to densely populated cities. Perhaps in course of time we shall evolve a double-decker street—the upper surface carrying traffic, while the lower deck, extending the full width of the streets, would be reserved for mains of every kind. Should such a system materialize, one can conceive that the upper-deck might ultimately be constructed of separate slabs of standard size bolted into position, and capable of instantaneous removal to give access to a pipe below. The same facility for removal would greatly expedite repairs, as a worn-slab could be taken out and a new one brought from stock and dropped into position. The cost of a road so constructed would reach a very high figure; but against this there is to be set the elimination of the perpetually recurring expenditure upon excavation, and the consequent loss upon trade and travellers. The authorities responsible for public services could afford to pay a handsome rental for subway accommodation."

Mirror Used to Observe Holders.—A mirror 18 in. by 24 in. in size has been erected by the Haverhill (Mass.) Gas Light Company on the top of a 30-ft. scrubber to enable the operating engineer to observe the works holders located a quarter of a mile away; and this purpose it effects admirably. Previously it was necessary for the engineer to climb sixty steps at various times throughout the day in order to obtain a view of the holders.

EXTENSIONS TO THE CARBONIZING PLANT AT MARGATE.

INSTALLATION OF LARGE TYPE WOODALL-DUCKHAM CONTINUOUS VERTICAL RETORTS.

It came to our notice recently that the Isle of Thanet Gas Light and Coke Company had installed new carbonizing plant at their Margate Works. We are indebted to Mr. J. M. Campbell, Engineer and Manager of the Company, for the information contained in the following article.

FIG. 1.—OVERHEAD STORAGE BUNKER AND TIPPING TRAY CONVEYOR.

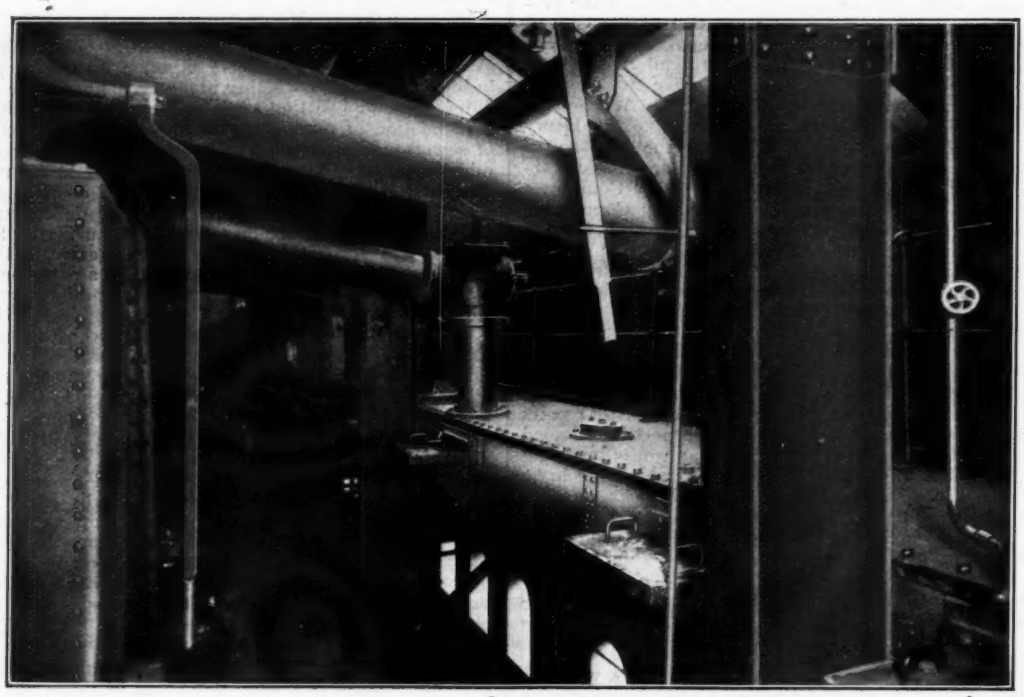


FIG. 2.—COMBINED SEAL POT AND COLLECTING MAIN.

In 1913 the Isle of Thanet Gas Light and Coke Company installed at their Margate Works Woodall-Duckham continuous vertical retorts with a carbonizing capacity of 95 tons of coal per day. It became necessary in 1925 to consider the question of extensions to the carbonizing plant; and as a result of the experience gained with the previous installation of continuous vertical retorts, the same type was again contemplated in this connection. There was available a house containing old inclined retorts; and the problem was to obtain the maximum carbonizing capacity in this house. After discussing various schemes, it was decided to erect a bench of Woodall-Duckham continuous vertical retorts with a major axis length of 103 in. These are the largest "W-D" retorts yet erected.

INCREASED OUTPUT PER SQUARE FOOT OF GROUND SPACE.

It is interesting to see to what extent this design has led to increase in gas output per square foot of ground space. The retort house has an area of 52 ft. by 106 ft., and held inclined retorts with an output of 1,100,000 c.ft. per day, or 200 c.ft. per square foot of ground space per day. The space occupied by the new vertical retort installation built within this house amounts to 52 ft. by 53 ft.; while the daily output of the new

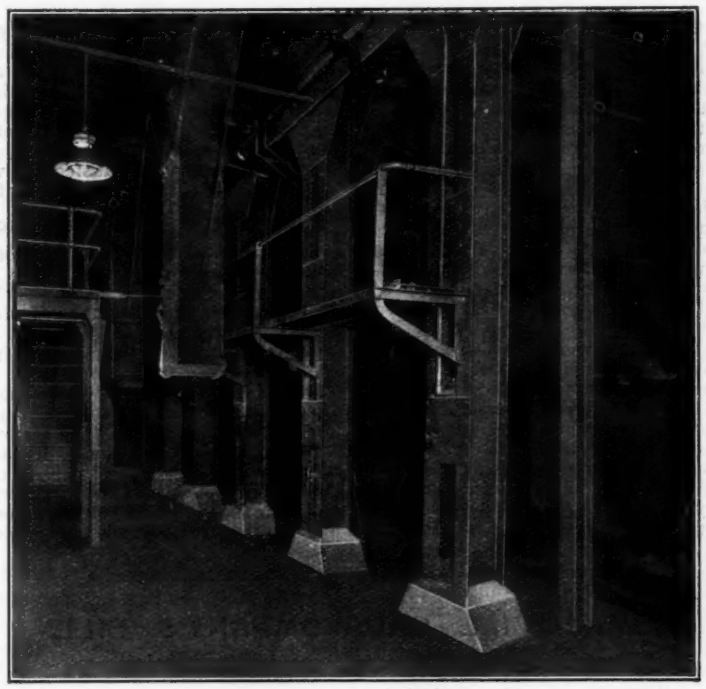


FIG. 3.—GROUND FLOOR.

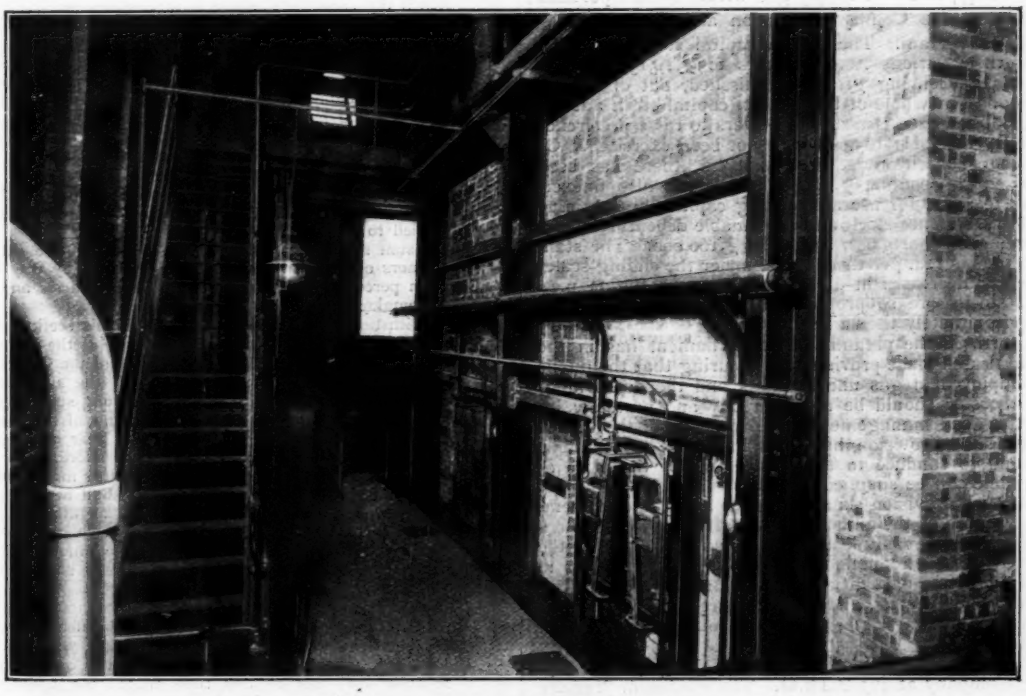


FIG. 4.—PRODUCER CLINKERING FLOOR.

plant is 1,500,000 c.ft. of gas, or 543 c.ft. per day per square foot of ground space. When the old inclined house is completed, containing extensions similar to the new vertical retort installation, the total daily output from the house will be 4,500,000 c.ft., or 816 c.ft. per square foot per day.

THE NEW PLANT.

The contract for the new installation was placed in June, 1925; but as it was not possible to obtain possession of the site for a few months, owing to the seasonal demand and the clearing operations, the erection of the plant did not start until January, 1926. The plant was on full gas making on Aug. 31.

The new installation comprises four settings, each of two retorts and one producer. Straight joints are formed between the settings, so that any one may be heated-up or cooled-down without interfering in any way with those adjoining. Coal is supplied directly into a small receiving hopper placed on the ground level in the adjoining store. From this receiving hopper it is taken by means of a jigging feeder into a 35-ton per hour single roll breaker. The small coal passes through a screen fitted to the feeder into a by-pass chute connected to the delivery chute under the breaker. The broken coal and the small coal are fed into a lipped gravity bucket conveyor, and are elevated to the level of the overhead storage hoppers. From the conveyor the coal is distributed, by means of a tipping tray conveyor, to the several compartments comprising the overhead storage bunkers. The overhead storage bunker and tipping tray conveyor are shown in fig. 1.

From the storage hoppers the coal passes through valves into auxiliary supply hoppers attached to the top mouthpieces of the retorts. These auxiliary supply hoppers constitute a new feature in design. In order to ensure a satisfactory coal feed along the whole length of the major axis of the retort, which, as stated, amounts to 103 in., it was decided to construct the auxiliary supply hoppers with two coal valves, two explosion doors, and two coal indicators. Regarding the auxiliary coal supply hoppers and off-take arrangements, the off-take pipe is central and rises vertically to a suitable distance below the storage bunker bottom, and then turns approximately at right angles, and descends to a combined seal pot and collecting main. One collecting main is placed at each side of the set-

ting, and is common to all the retorts on the one side. Fig. 2 shows the combined seal pot and collecting main.

The coal falls by gravity through the retorts at a speed governed by the rate at which the coke is extracted from the bottom. Fig. 3 illustrates the coke extractor wheel, the water sealed coke hoppers, and the ash chutes from the producer clinkering stage. The coke is discharged from the water-sealed coke hoppers into hand-propelled side-discharging skips. The coke for the producers is elevated by means of a steam engine driven lift, and is charged into the respective compartments of the overhead storage hoppers.

The retorts are constructed of first-grade silica material. The combustion chambers heating them are provided with an auxiliary secondary air inlet, so that the heats at the bottom of the retorts can be increased to the desired temperature when steaming. The front walls and the top of the setting are faced with special insulating bricks, outside of which is laid a thick coating of special insulating material, to reduce to a minimum heat losses through radiation.

Each pair of retorts is heated by producer gas made in "W-D" step-grate producers of specially large grate area. Fig. 4 shows the producer clinkering floor for four of the retorts. The ample and convenient working space will be noted.

In order to utilize the major portion of the heat contained in the waste gases after they leave the settings and before they are discharged to atmosphere, a waste-heat boiler is installed. This is of the horizontal firetube type, and has a steam raising capacity of approximately 6500 lbs. per hour of steam at 120 lbs. per sq. in. from feed water at 60° Fahr. A feed water heater of the closed tubular type is provided for raising the temperature of this water by means of exhaust steam. An induced draught fan is fitted on the outlet of the boiler, to draw the waste gases through the boiler, and to maintain the necessary draught for the satisfactory working of the settings. This fan is driven by a vertical high-speed steam engine.

Ten-Ton Retorts.

Each of the retorts has a carbonizing capacity of 10 tons when making, with steaming, 460 B.Th.U. gas—or, in other words, each retort is equivalent to a gas output of over 50,000,000 c.ft. per annum. It is interesting to note that 65 p.ct. of the gas undertakings in this country have an annual output of less than the producing capacity of each one of these retorts.

The plant is operated by two men per shift, excluding the attention to the producers, and labour for handling the coal into the overhead bunkers and removing the coke.

Owing to the coal dispute, it has not yet been possible to carry out any tests under normal conditions; but the results obtained when working with American coals give good promise. No material difficulty has been experienced in carbonizing American coals in this type of plant.

COMMERCIAL GAS COMPANY'S BILL.

Basic Price and Dividend—Employee Directors.

The Gas Bills to be promoted in Parliament this year include one drafted by the Commercial Gas Company, who were incorporated in 1847, and who supply gas within certain portions of the Administrative County of London and of the County Borough of West Ham. The 4 p.ct. capital stock issued by them under their various Acts amounts to £1,513,280 (premiums, £12,422), leaving £149,298 unissued, out of a total of £1,675,000. The whole of the 3½ p.ct. capital stock authorized (£560,000) has been issued; but powers to raise preference stock to the amount of £105,000 have not been exercised. Of the £585,000 of debenture stock authorized, there has been issued £475,000 (discounts, £4226). There are also unexercised powers to raise, for use as working capital, by the issue of redeemable preference stock and redeemable debenture stock, or by borrowing on mortgage, a total of £160,000. The standard price of gas is 12d. per therm; and under the sliding-scales the increases or decreases in dividend payable on the 3½ p.ct. and 4 p.ct. stocks are so proportioned as to make the two stocks of approximately the same value.

It is set forth in the preamble that Parliament has in the past in certain cases made provision for securing that the public and those employed in gas undertakings and those providing the capital therefor should be more directly and mutually interested in the good management and prosperity of the undertakings, and such provision has been found to be of public advantage and to conduce to the cheapening of the price at which the public can be supplied with gas. The Company are desirous that such provision should be made applicable to them, and that the profits of their undertaking, after providing for a reasonable return on capital, should be applied as to the greater part thereof in reduction of the price of gas, and as to the balance thereof in part in increasing returns on capital invested in their undertaking, and in other part in increasing the financial interest by way of bonus to employee co-partners of the Company.

It is proposed to fix the calorific power of the gas to be supplied by the Company at 475 B.Th.U. The minimum pressure shall, in any main or in any pipe laid between the main and the meter having an internal diameter of 2 in. or upwards (except in the case of accident, alterations, or repairs) be not less than 2 in.

Price of Gas and Application of Profits.

The basic price of gas shall be 11·4d. per therm. The Company may, subject to and in accordance with the provisions of the Bill, increase or reduce the price charged above or below the basic price; but, except as otherwise provided, they shall not declare any larger dividend on any ordinary stock than at the rate of 5 p.ct. per annum on such ordinary stock issued before the passing of this Act and for the time being paid up (all of which stock shall rank equally for dividend), and at the rate of 6 p.ct. per annum on ordinary stock issued after the passing of the Act—these being the "basic rates." The surplus profits of the Company shall be divided in the proportions of three-fourths to the consumers and one-fourth equally between the ordinary stockholders and the employee co-partners of the Company, in accordance with the following provisions:

(1) At the end of each year or half-year a sum shall be calculated representing the amount by which the total amount payable by consumers during each year or half-year has been less than the amount which would have been payable if the gas had been charged for at the basic price; and such sum so calculated shall be called "the consumers' share," and for the purposes of this section "the surplus profits" shall mean a sum of which the consumers' share is three-quarters.

(2) If and so far as the balance standing to the credit of the net revenue account after providing for dividend on the preference stock (if any) and dividends at the basic rates on the ordinary stock in the opinion of the Directors permits, a sum not exceeding one-quarter of the surplus profits shall be applied in two equal parts for the benefit of the holders of ordinary stock and for the benefit of the employee co-partners of the Company in manner hereafter mentioned.

(3) Any sum so to be applied for the benefit of the holders of ordinary stock may be applied in the increase of the dividends above the basic rates, and if, and so far as, not so applied shall be carried to the reserve fund.

(4) The sum so to be applied for the benefit of the employee co-partners of the Company shall be allocated by way of an uniform percentage of bonus on the basic salaries and wages of the employee co-partners of the Company.

(5) Notwithstanding anything contained in this section, the Directors may, out of the funds and revenue of the Company, distribute among the employee co-partners of the Company in any year or half-year in respect of which the sum allocated by an uniform percentage as aforesaid among such co-partners is less than 3 p.ct. on the aggregate amount of the basic salaries and wages of such co-partners in such year or half-year such a sum as will make up the amount so allocated to 3 p.ct. on such salaries and wages; and the Directors may in any year or half-year in respect of which no sum shall be allocated to the employee co-partners of the Company as aforesaid distribute out of such funds and revenue among such co-partners a sum equivalent to 3 p.ct. on the aggregate amount of the basic salaries and wages of such co-partners for such year or half-year.

(6) Any balance of the profits of the Company not applied as aforesaid shall be carried to the credit of the net revenue account of the Company for the next following year or half-year: Provided that the sum standing to the credit of such net revenue account shall not at any time exceed the amount required to pay one year's dividend on any preference stock and one year's dividends at the basic rates on the ordinary stock of the Company.

The Company shall not later than the session of 1937 promote a Bill proposing a revision of the basic price now fixed, or giving an opportunity for such revision to be made. The London County Council and the council of any Metropolitan or county borough within or partly within the limits of supply of the Company shall be entitled to be heard on such Bill.

There are clauses relating to borrowing and other financial matters—including contributions to a special purposes fund.

Employee Directors.

Another part of the Bill is to enable the Directors, with the sanction of a majority of the proprietors, to put in force a scheme to permit of one or more, but not exceeding three, of the employee co-partners becoming Directors of the Company. The qualification of an Employee Director shall be fixed by the scheme for the time being in force; but such a Director shall have been not less than seven years in the constant employ of the Company, and shall for not less than twelve months prior to his appointment have held in his own right a minimum of £50 (nominal) of ordinary stock. If any Employee Director ceases to hold at least such an amount of stock, he shall cease to be a Director. The Directors so appointed will

be in addition to the number referred to in the Company's Act of 1875.

The fees to be paid to an Employee Director for his attendance at meetings of the Directors shall be fixed by the scheme, and shall bear some proportion (to be so fixed) to the amount of the qualification, not being less for each attendance than his ordinary day's pay nor more than four times that amount.

There are provisions for the appointment of a Managing Director or Managing Directors, and other sections relating to members of the Board. Some clauses are to give the Company power to specify sizes and materials of pipes and fittings, and to relieve them—under the terms of the agreed clause—in certain circumstances, from obligation to supply gas. There are provisions for prohibiting building, without reasonable notice, over the Company's apparatus:

> From and after the passing of this Act, no person shall erect or extend, or cause to be erected or extended, any building or structure on or over any land in or under which there shall be any main pipe or apparatus of the Company until he shall have given to the Company reasonable notice in writing of his intention to so erect or extend such building or structure, together with reasonable particulars of the land on or over which it is proposed to erect or extend the same.

There is a section providing that, if the Company notify a consumer that any piping or gas consuming appliances or the fixing thereof on his premises is dangerous, the consumer shall carry out such work as will remove the cause of danger, within three days of the service of the notice, or such longer period as may be specified. Failing the carrying out of such work, the Company may cease to furnish gas to the premises, and charge the consumer with the cost of cutting off the supply.

[*Parliamentary Agents : Messrs. Sherwood & Co.*]

LIGHTING THE CITY OF CALCUTTA.

By A. J. TAYLOR, M.I.L.E., Lighting Superintendent, Calcutta Corporation.

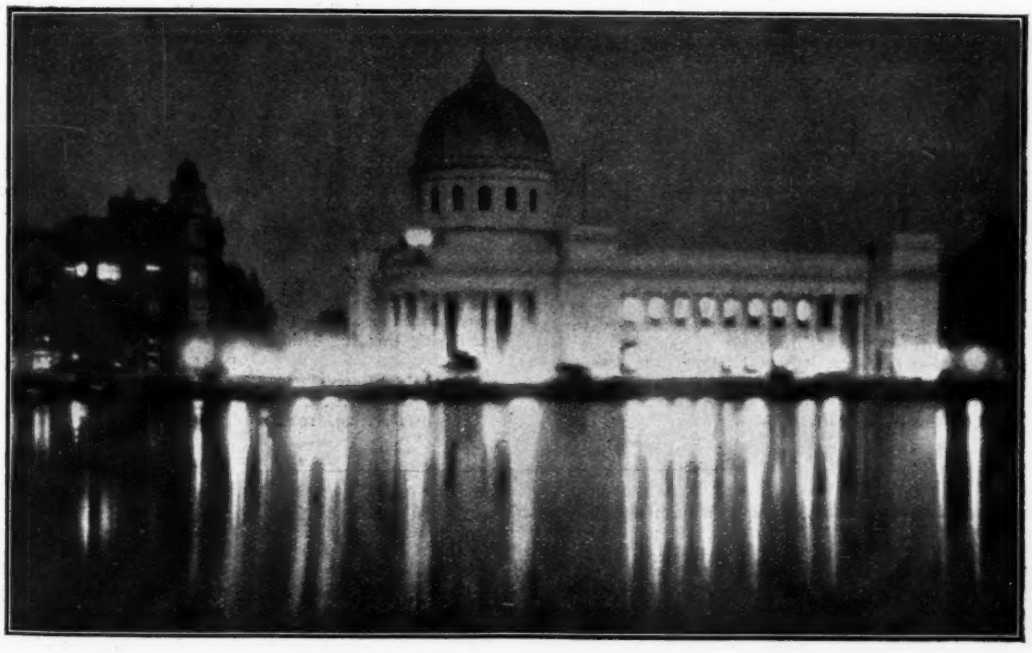
[From the "Calcutta Municipal Gazette," Nov. 20, 1926.]

The immensity of the problem of lighting Calcutta can be gauged from the idea of lighting a road 277 miles long—a road from Calcutta to Jesidih Junction, and from Jesidih to Madhupur, up and down again, and taking in all jungle paths for a mile round. This much for the Calcutta of 1911-12, when the Corporation decided to take over the lighting of the city from the Oriental Gas Company. Upon the execution of the new contract with the Company, on Dec. 14, 1909, it was arranged that the Company should only provide for the supply of gas at a fixed pressure and candle power; the actual lighting being carried out, and the lamps maintained, by the Corporation. The organization of a Lighting Department was then decided upon. The intervening period between execution of the new contract and its coming into force in March, 1912, was a very busy one, dealing with tenders, samples, and testing of the comparative merits of all sorts of things required for the improvement of the city lighting. Speaking of the old generation of Calcutta, they can well remember the deficiency of the then street lighting with flat-flame gas lamps, very wide apart and in single rows, or, at more important crossings, with upright burners and mantles, and the gas at a very low pressure. The "Statesman's" remark, "Twinkle, twinkle, little star," with reference to these lamps, was not very much beside the mark.

The Municipal Commissioners—especially Rai Ramtaran Banerjee Bahadur and the late Rai Radha Churn Pal Bahadur—took a very keen interest in the new scheme; and gas experts of high English repute—like Messrs. Mansfield, Abady, and the then Chief Engineer, MacCabe—were conferred with. The Gas Company, too, were not slow to confer with such men in connection with the necessary alterations to their plant, in order to comply with the terms and conditions of the new agreement, mainly dealing with the pressure and candle power of the supply. The pressure of the gas supplied is one of the main factors on which the efficiency of lighting with mantles depends. The illuminating power of mantles depends upon the calorific value of the gas, which, again, depends upon the quantity and quality of gas burning per minute with the requisite quantity of air for full combustion. Here the question of pressure comes in; and the necessary increase of pressure throughout the city made it possible to employ the more efficient type of inverted gas burner now in use, which is named after its inventor, Mr. Mansfield.

Preparation for the entire change of installation of 10,000 burners throughout the city, and the transfer of the staff of lamplighters from the Gas Company to the Corporation, was made during the early part of 1912; and the whole of the heavy work was carried through successfully by March 1, when the city lighting came under the direct control of the Lighting Department. The immensity of the task will be realized when it is pointed out that within the very short period of seventeen days, from Feb. 10 to 26, the necessary change of installation throughout the city had to be completed. It should also be noted that the installation of new burners could not proceed gradually section by section. The disadvantage of a gradual change was that, without increased pressure, the new burners would have been ineffective; whereas an enormous quantity of gas would have been wasted at the old burners if a high pressure had been uniformly provided to suit the new ones. It was no doubt possible, by a system of governors, to shut-off the areas where the pressure was increased; but it would have involved a heavy expense. Hence all this haste.

About 8000 Mansfield inverted burners and 2000 Kern burners, with all necessary accessories, were fitted to the public street lamps, and the old burners removed. Altogether about 100,000 parts were handled in fitting up 10,000 burners; and



GAS LIGHTING OUTSIDE THE G.P.O., CALCUTTA.

GAS LIGHTING OF PARK STREET, CALCUTTA.

as 7000 of the old lamps were of various sizes, each burner and adaptation fitting had to be separately fitted, and in all cases short brass pieces had to be specially cut and screwed to suit these lamps. The Gas Company, it must be said to their credit, agreed to make no extra charge for the excess gas consumed, owing to the increased pressure, by all old burners not changed by March 1, 1912. The task was carried out within seventeen days; and a saving of Rs. 6000 was effected on this account only.

During the last seventeen years—*i.e.*, from 1909-10 to 1925-26—7296 gas lamps have been added to, and 1148 oil lamps removed from, the city. The total number of electric street lamps added is 1407. Again, 71 additional gas lamps have been erected and lighted in the added area of Cossipore-Chitpur. In the added areas of Manicktolla and Garden Reach, 242 and 162 electric lamps, respectively, have been installed and put in lighting. To enable the ratepayers to form a rough idea of the various activities of the Department, it may not be out of place to mention that 304 cases of damage to public gas lamps by motors, buses, and carts were investigated during last year; and in only 45 instances out of the total number were damages unrealized. This is, of course, apart from the clockwork duties of the Department, from the Lighting Superintendent down to the lamplighter, for efficiently maintaining the street lamps in the city.

The scheme for the departmental maintenance of street electric lighting in the city has been generally approved by the Corporation, and the work will be taken up next year.

Mr. Snelgrove, General Manager of the Oriental Gas Company, and his staff, have greatly added to the efficiency of the lighting of Calcutta by giving even pressure with gas of a good quality, as well as immediate attention to all defects in mains, &c.; and the gas-works now rank with any of the finest in England.

CORRESPONDENCE.

[*We are not responsible for opinions expressed by Correspondents.*]

Coal Supplies for the Gas Industry.

SIR,—Through all the various strikes that have taken place in late years, the gas industry is practically the only one that has kept going and has supplied the public with the means of cooking, heating, and lighting. This has only been done at tremendous expense to themselves, increased prices of gas to their customers, and sometimes reduced dividends to their shareholders; while the worry and anxiety to the Boards of Directors and Engineers have been terrible. Now that the Government are giving their official patronage to the electrical industry, and guaranteeing the money which that industry will have to raise to carry out the colossal scheme for electrification of this country, surely the time has arrived when the gas industry should approach Parliament to obtain similar assistance.

My suggestion is that the gas industry should request Parliament to give them the power to raise sufficient money (which would be guaranteed by the Government) for the gas industry to purchase a controlling number of shares in those coal mines which produce the type of coal best suited for carbonization. This should not be beyond the power of the gas industry to accomplish, particularly with adequate help from the Government. As most of the big gas companies' employees are co-partners, it would follow that these mines would speedily be co-partnership manned. The country would therefore be assured of the supply of the most important commodity, next to food, that is required for its existence.

Middlemen's profits on coal would be cut out, and the price of gas could be so speedily reduced that the discrepancy which now exists between the cost of heating by coal fires and by gas fires would become negligible. A greater demand for gas would follow, and all this would mean a greater output of coke. This would then place the gas industry in the position of being the largest suppliers of light, heat, and power in the kingdom.

Coupled with the above is, of course, the possibility of cleaning the coal at the pithead, thereby obtaining the exact kind of coal required to make good gas and good coke, and saving the cost of transport of many thousands of tons of incombustible material and ash all over the country. I do not pretend to know what all this would cost; but I am confident that the men in whose hands the gas industry now lies are capable of a broad enough vision and sufficient energy to carry some such scheme to fruition. There would, of course, be the usual outcry from the wholesale and retail coal merchants; but surely they could be induced to co-operate with the gas companies, and sell coke instead of coal.

I feel sure that discussion on the above subject among the people concerned must bring good results, and thank you for your courtesy in publishing this suggestion.

P. H. RICHARDSON (Major, R.F.A.).

4, *Lloyds Avenue,*
London, E.C. 3,
Dec. 29, 1926.

Stoke-on-Trent Corporation Bill.—In spite of protracted negotiations between the Stoke-on-Trent City Council and the Wolstanton Urban District Council over the question of allowing the former body to carry a gas main across part of the latter authority's area, in order to connect the Etruria and Longport Gas-Works, no agreement has up to the present been arrived at. As a result of the deadlock, the City Council have (as already intimated in the "JOURNAL") deposited a Bill in Parliament to empower them to lay the main through a specified area, at a cost of £14,500.

North Middlesex Gas Stock.—The North Middlesex Gas Company announce that the original ordinary 10 p.ct. standard stock and the additional ordinary 7 p.ct. standard stock are being converted, as from Jan. 1, into an equivalent amount of standard consolidated stock bearing a standard rate of dividend of 6 p.ct. per annum. In every case the dividend on the amount of converted stock to be issued in substitution for the existing stocks will be unaltered; the object of the conversion being, of course, to have only one class of ordinary stock.

REGISTER OF PATENTS.

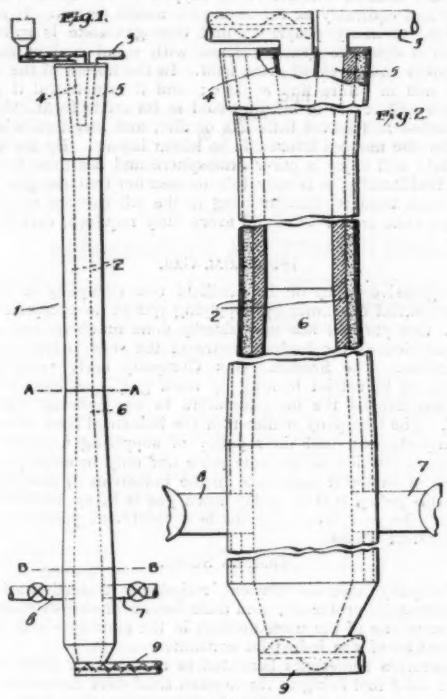
Carbonizing Pulverized Fuel.—No. 242,623.

INTERNATIONAL COMBUSTION ENGINEERING CORPORATION, of New York (Assignees of W. Runge, of East Orange, N.J.).

No. 26,917; Oct. 27, 1925. Convention date, Nov. 6, 1924.

According to this invention, which relates to the method of carbonizing pulverized fuel by causing it to descend in an atmosphere of ascending hot gases, the descending fuel becomes burnt, as it passes below the carbonizing zone, in a limited supply of oxidizing gases, so that the fuel is converted substantially completely into combustible gases.

Fig. 1 is a side elevation of a vertical retort, and fig. 2 a similar view on a substantially larger scale, with certain parts broken away and certain parts in section. The retort 1 has upright walls 2, which may be hollow, and an offtake pipe 3. The material to be treated, preferably coal in dry, finely sub-divided or pulverized form, is delivered through a preheater 4 wherein it remains sufficiently long to become heated by the gases within the space 5, which is in effect an upward continuation of the treating zone 6. The preheated pulverized coal is showered into the treating zone 6, which may be a carbonizing zone within which a substantial portion of the volatile content of the coal is expelled under conditions to leave a carbonized residue. This continues to descend, and is gasified completely at the bottom or base of the zone 6, where there is a region where heat is generated by admission of oxidizing gases through valve-controlled pipes 7 and 8. For instance, air may be introduced in controlled amounts through pipe 7; or a limited amount of air may be supplied through pipe 7 and a limited amount of combustible gas through pipe 8.



A Runge Retort.

The base of the retort has a known device 9 by which any deposited residual solid can be withdrawn without admitting an objectionable amount of air into the retort or permitting escape of any gases. The upper interior part of the retort flares so as to ensure a relatively slow velocity of flow of the gases passing the preheater 4 on their way from the zone 6 to the offtake 3. It will be noted that the preheater 4 would occupy a substantial volume of the upper portion of the retort if the flaring construction were not provided; and this would cause an increased velocity of the gas within this upper portion and the consequent sweeping through pipe 3 of the pulverized material freshly introduced into the retort.

The patentees then explain at some length their reasons for shaping the retort as shown in the diagrams. This is to avoid hanging-up and adhesions.

Coin-Freed Mechanism.—No. 261,831.

SIMPSON, S., of Exmouth.

No. 21,068; Aug. 22, 1925.

This invention relates to coin-freed mechanism of the kind in which an externally screw-threaded sleeve is slidably mounted upon a spindle and engages with a pinion rotated by the meter mechanism.

According to the invention, the spindle upon which the sleeve is mounted is disposed co-axially with the measuring wheel and is adapted to be directly rotated thereby. The spindle may be provided with a squared part upon which the sleeve may be slidably mounted, in which case the end of the spindle may be fixedly connected to the measuring wheel. The sleeve is adapted to engage with a valve operating lever which is such that the valve is maintained open or partially open until the predetermined quantity of gas has been consumed, and is then quickly closed. For this purpose the sleeve may be provided with a flange, collar, or the equivalent adapted to engage with the lever, and the latter may be formed with an inclined cam face by which, as the gas is consumed, the valve may be gradually closed; and the lever may have a recess within which the co-operating part of the flange is received when the pre-determined quantity of gas has been consumed, whereby the lever may be moved by spring or other means to close the valve completely.

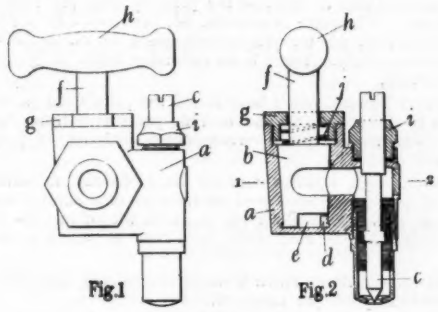
Further, the sleeve may be adapted to actuate a lever connected to a pointer, whereby the quantity of gas available for consumption may be indicated. The lever may have a cam face for engagement with the flange, and may be maintained in contact with the sleeve by a spring or other means.

Taps.—No. 261,939.

PARKINSON STOVE CO., LTD., and GIBB, D. M., both of Stechford.

No. 312; Jan. 5, 1926.

The tap or cock of this invention is shown in side elevation and in section in figs. 1 and 2 respectively. The body part *a* is made, under a hot stamping or die casting process, with its interior adapted to receive the conical plug portion *b* and also the screwed regulator *c*. The plug is contained entirely within the casing; and its inner end, and likewise the closed end of the body aperture which receives it, are adapted to engage in such manner as to provide an interior niting device with positive steps. In the form shown, the niting device comprises a small projection *d*, formed integrally with the interior of the body part, and a gap *e* in the plug; the ends of the gap being adapted to abut against opposite sides of the projection when the plug is rotated from one position to the other. At its opposite end the plug has an extension *f* constituting a handle stem which projects through a screwed gland *g* arranged with the body part. The finger piece *h* is mounted on and secured to the extremity of the stem after the gland has been slipped over. A spring *j* holds the plug against its seating. A stuffing-box gland *i* is also provided in association with the screwed adjuster *c*.



A Parkinson Tap.

The patentees claim that thus they can produce economically gas taps or cocks of a neat and compact appearance, not liable to derangement in transit and fixing, that may be relied upon to maintain an effective gas-tight joint when in service with the necessary freedom for movement of the plug and also of the regulator.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for Dec. 30.]

Nos. 32,129—32,728.

BRASSERT, H. A., and BRASSERT & CO., LTD., H. A.—"Apparatus for washing gas." No. 32,724.

BROADHEAD, R. W.—"Manufacture of gas." Nos. 32,151, 32,152, 32,153, 32,154.

DEMPSTER & SONS, LTD., R.—See Broadhead, R. W. Nos. 32,151, 32,152, 32,153, 32,154.

DONALD, W.—"Carbonization of coal." No. 32,606.

DUCHEMIN, A. C. D.—"Gas scrubber." No. 32,223.

EVANS, W. E.—"Distillation of carbonaceous substances." No. 32,434.

HALDEN, C. AB-DER.—"Carbonization of coal, &c." No. 32,189.

HUMPHREYS & GLASGOW, LTD.—"Apparatus for carburetting water gas." No. 32,715.

HUMPHREYS & GLASGOW, LTD.—"Apparatus for making gas." No. 32,716.

KOHLENVEREDLUNG AKT.-GES.—See Evans, W. E. No. 32,434.

LAING, B.—"Manufacture of gas." No. 32,248.

NIELSEN, H.—See Laing, B. No. 32,248.

PIGGOTT & CO., LTD., T.—"Pipe joints." No. 32,490.

SCHROEDER, F. W.—"Incandescent gas burner." No. 32,420.

SOC. AMMONIA.—"Process of purifying gas." No. 32,714.

STILL, C. [Firm of].—"Gas fired furnaces." No. 32,556.

MISCELLANEOUS NEWS.

REDUCTIONS IN THE PRICE OF GAS.

A substantial "Christmas box" has been given by the Douglas (Isle of Man) Gas Company to their consumers, in the form of a reduction of 2s. 2d. per 1000 c.ft. in the price, to take effect as from Jan. 1. The reduction, says "Mona's Herald," is a tribute to, as it is the result of, the wisdom of the policy of the Directorate in a time of unexampled difficulty. The writer adds that, in the crisis through which Douglas, in common with the rest of the Island and the country at large, has passed, the Directors, the Manager (Mr. A. R. Bisset), and the staff of the Company have rendered the community splendid service.

The Directors of the Maidstone Gas Company have decided to reduce the price by 0·4d. per therm, as from the December readings of the meters.

The Mossley Town Council have decided to reduce the price of gas after the end of the current quarter from 1s. 2d. per therm to 11½d. per therm, and to reconsider the matter in March next.

A reduction in the price of 6d. per 1000 c.ft., as from the present meter readings, is announced by the Directors of the Sunderland Gas Company. The new gross price is 3s. 6d. per 1000 c.ft. for lighting, heating, and cooking, less discounts ranging from 1d. to 6d., according to consumption, and 3s. 4d. for power purposes, less discounts ranging from 1d. to 7d., according to consumption. The new gross price is equivalent to 8·4d. per therm, less discounts. There will be corresponding reductions for Castletown, North and South Hylton, and Whitburn. All consumers will therefore have used gas for one quarter only at the higher rate; and the Directors fully anticipate that after another quarter a further reduction will be made.

INCREASES IN THE PRICE OF GAS.

The Brighouse Town Council have approved an increase in the price, to date from Jan. 1, of 1d. per therm.

In Cambuslang and district an increase of 6d. per 1000 c.ft. will take place from the next quarter survey.

The price at Chorley has been increased by 6d. per 1000 c.ft., to apply to the months of January, February, and March only. Afterwards the existing charges will operate.

The Droitwich Town Council have decided to increase their price by 8d. per 1000 c.ft.

At the monthly meeting of the Grangemouth Town Council, last week, it was decided to increase the price by 10d. per 1000 c.ft., or 2d. per therm. The price is now 6s. 8d. per 1000 c.ft. for ordinary consumers, and 7s. 1d. for prepayment users, or 1s. 4d. and 1s. 5d. per therm respectively. There is an estimated deficit of £4651 on the gas undertaking.

The Retford Town Council have raised the price from 4s. to 4s. 6d. per 1000 c.ft. from Jan. 1, and to 11d. per therm from April 1 to ordinary consumers, with a corresponding increase to prepayment customers.

The Spenborough District Council have decided to advance the price by 1d. per therm, on top of an increase of a similar amount in October. It is hoped to work off in about fifteen months the extra expense created by the coal strike, and then to return to the lower price.

The Stratford-on-Avon Town Council are raising the price to ordinary consumers by 6d. per 1000 c.ft.

The Todmorden Town Council have advanced the price by 1d. per therm, following a similar increase three months ago.

PROGRESSIVE DERBY AND EDUCATION.

Making Competent Craftsmen.

Standing with a wad of Treasury notes in front of him for distribution to boys employed by the Derby Gas Company, on Jan. 1, Councillor J. Ferguson Bell, the General Manager of the Company, spoke of the value of true craftsmanship and the importance of having a trade in one's fingers. The gathering took place in the Board Room at the head office, and 43 boys each received a ten-shilling note for regular attendance at lectures arranged by the Company to improve their knowledge of gas apparatus. This was the happy wind-up to the first lecture course.

Reference was made to the services of Mr. E. Jones (Chief Chemist) and Mr. H. Clark (Distribution Superintendent) in connection with the imparting of practical and theoretical instruction to the boys. Out of over fifty boys attending the classes, 43 were entitled to Treasury notes.

Councillor BELL commenced by wishing the lads a happy and prosperous New Year, and said he was glad to know that the majority of them were entitled to the lecture bonus. They had taken a keen interest in the course, and the instruction received would be to their advantage as they advanced in their trade. It was a splendid thing for every worker to be master of his occupation. As a member of the Education Committee, he had always advocated the call for competent craftsmen. He did not see the reason for the marked difference often made between manual and brain labour; and there was no doubt that the man with a trade in his hand had a better chance, on falling out of employment, than a clerical worker. He wished to impress upon the boys before him the joy to be found in becoming competent craftsmen and taking a real interest in their work. The lectures were arranged to help them in this direction.

On the proposition of Mr. CLARK, the boys gave a rousing cheer to Mr. Bell for his keen interest in their future.

SHEFFIELD'S GAS SUPPLY DURING THE STRIKE.

In the "Sheffield Daily Telegraph" Trade Supplement for Dec. 30, there appeared an interesting article describing the activities of the Sheffield Gas Company, with particular reference to their excellent work during the recent coal strike. Extracts from the article follow:

Do the general public realize the immense services rendered to them by the gas industry during the year? Town gas has proved a blessing to many, and without its timely help it is natural to ask the question: "How would the average citizen have fared without it?" In Sheffield, the beginning of the coal strike found the local undertaking prepared; and never once during the time has the supply failed to meet requirements. Though repeated requests were published asking for economy, the actual consumption increased by leaps and bounds. Pursuing a fair policy to all grades of society, every endeavour was made to give "service" with no reservations; and the worthy citizens of this great community have again been shown the possibilities and advantages of gas.

Apart from the difficulties of obtaining supplies of fuel for carbonizing purposes, the distributing sections of the undertaking have been strained to breaking point in order to supply and fix appliances; and it is to these new consumers the Company have a special message. It is the ambition of the Gas Company to serve them well and know they are satisfied. Users should not hesitate to write about their difficulties—a postcard will suffice. The Company have confidence in the commodity they offer.

COKE SUPPLIES.

As distributors of coke for both domestic and industrial use, the local Gas Company are due for a word of praise. Thousands of citizens have availed themselves of supplies; and these were dealt out fairly and equitably as far as stocks would permit. It has been a revelation to many people to find that gas coke is suitable for burning in a domestic grate. Mixed with small coal or dust it is easily kindled and gives off great heat. In the homes of the working classes it will in future find a place; and it is doubtful if some of the citizens will revert to burning coal in its crude form. As a fuel it is smokeless and leaves little ash or dirt, and therefore is a means at hand for the modern housewife to lessen labour. By its increased use Sheffield will enjoy a purer atmosphere and healthier living conditions. Incidentally, it is only fair to mention that the gas industry at the present time is experimenting in the laboratories to produce a type of gas coke which will fulfil every duty required, even to speedy ignition.

INDUSTRIAL GAS.

The progressive policy of the Sheffield Gas Company of encouraging the industrial consumer by supplying gas at an exceptionally low figure for this purpose has undoubtedly done much to maintain the city's reputation as the leading centre of the steel, silver plate, and cutlery trades. The Sheffield Gas Company early recognized the possibilities of industrial heating by town gas, and have since consistently encouraged the manufacturers to use gaseous rather than solid fuel. The Company realize that the industrial load is one of the utmost importance; and their policy of supplying a clean, reliable heat agent at the lowest possible price not only benefits themselves, but also is of material assistance to the industries of Sheffield. The result of this policy is that to-day town gas is being used day in and day out, all the year round, for the heat treatment processes peculiar to the Sheffield trades.

TRAINED STAFF.

The Company have an efficient technically trained staff to deal with all industrial problems; and their furnace demonstration room—which is now one of the most modern in the country—is at all times at the services of the industrial consumer.

Manufacturers sometimes hesitated to change over from the crude method of solid fuel firing to the modern smokeless method of gaseous firing, because they were under the impression that town gas was too costly. This is not the case. The Sheffield Gas Company are alive to the fact that the dominant considerations which influence the manufacturers' choice of fuel are efficiency of production and the total manufacturing cost of the finished article. They know well that unless town gas can show an advantage over raw coal, the crude methods of the past of burning solid fuel, with all the dirt, smoke, and inconvenience attached to the latter, will continue to be used despite the inherent advantages of town gas.

The Sheffield Gas Company have provided an unrestricted supply of gas to all users, notwithstanding a coal strike of unprecedented length. It is not surprising, therefore, that this year has seen a further increase in the demand for gas for industrial purposes. This increased demand for gas as a fuel is definite proof that the Company's efforts to maintain the supply at all costs has been appreciated by the manufacturers of Sheffield.

Middleton Gas-Works Visited.—On Saturday, Dec. 18, a large party of engineers and others visited the Middleton Gas-Works, over which they were conducted by the Engineer (Mr. William Rogerson) and his staff. Among those present were the Mayor (Councillor A. H. Hollingworth) and the Chairman of the Gas Committee (Alderman A. Hilton). The whole of the process was followed, from the arrival of the coal at the works to the transmission of the finished gas to the holders. In the course of subsequent speech-making, both the Mayor and the Committee Chairman referred to Mr. Rogerson's enthusiasm in his work on behalf of an undertaking of which all of them were proud.

INAUGURATION OF NEW HOLDER AT NEATH.

A new holder, with a capacity of 100,000 c.ft., has been for some months past in process of erection at the Neath Gas-Works. The construction has now been completed, and on Dec. 17 it was officially put into commission by the Chairman of the Gas Committee (Alderman M. G. Roberts) at a function arranged by the Gas Engineer and Manager (Mr. W. Clark Jackson).

Alderman ROBERTS, before performing the ceremony, stated that, as Chairman of the Gas Committee, it gave him great pleasure to have the honour of officially putting the new gasholder into working order. For its erection they had to thank Mr. Jackson, their Engineer and Manager. He (Alderman Roberts) remarked that when the addition was at first suggested before the Gas Committee, in view of the high rates of the town, he had not altogether been in favour of it, and he had thought, at the time, that it would be better to leave the consideration of the scheme until a future date, when times might be more prosperous. But his Committee, he was glad to say, were wiser than he, and the scheme had been adopted. The work had been in the hands of Messrs. Bates & Sons, contractors, of Leicester, and he gathered from the reports sent to the Committee from time to time by Mr. Jackson, that the work had been finely carried out and finished in a reasonable period. It was hoped that the erection would mean, in the near future, cheaper gas. He was pleased to be able to say that, during the years he had been on the Gas Committee, excellent progress had been made in clearing the debts attached to the works. He congratulated Mr. Jackson upon the work he had done in this respect.

Alderman Roberts then opened the outlet valve of the holder.

Alderman D. G. DAVIS (ex-Mayor) paid a tribute to Alderman Roberts and the Gas Committee. Under the direction of Mr. Jackson, he said, the gas-works had been turned into a great source of revenue.

Alderman W. B. WILLIAMS observed that every time Mr. Jackson brought a proposal before the Gas Committee he had considered every detail carefully. As for the venture just executed, it was in the interests of future economy, and added to the efficiency of the works.

Mr. Bates, the contractor, remarked that the new holder was an essential addition to the plant. He was no stranger to their works, and he congratulated the Committee on having the services of so able and efficient a man as Mr. Jackson.

Mr. JACKSON paid a tribute to his Assistant, Mr. F. Dupont.

BOURNEMOUTH AND FOREIGN COAL.

When the struggle in the coalfields broke out on May 1, the Bournemouth Gas and Water Company were in the fortunate position of having an exceptionally large amount of coal in stock. It had been thought wise to be prepared, and 20,000 tons had been accumulated in the store at Poole. It was considered that such a supply might reasonably be expected to last until work had been resumed in the pits; but when months went by without any improvement in the situation, it became plain that, if the gas supply was to be maintained, foreign coal would have to be secured. This was done; and from that point we will take up the tale from the December issue of the Company's own journal, "The Co-Partner."

The first Continental consignment was shipped at Hamburg, and consisted of Silesian coal from Poland. This coal was found to be quite good for making gas; but unfortunately it was almost totally devoid of caking qualities, and the coke produced from it was little better than breeze. The average analyses made in the Company's laboratory come out as follows:

	P.Ct.
Moisture	4·5
Volatile matter	34·0
Ash	8·4

The available supplies of Silesian coal were very soon exhausted; and we then had to fall back upon a Czecho-Slovakian coal known as Ostrauer. Though not containing so much volatile matter as the Silesian samples, this coal had better caking qualities, and therefore produced a much stronger coke. The average analyses of the cargoes of Ostrauer coal received by the Company are as follows:

	P.Ct.
Moisture	2·4
Volatile matter	30·0
Ash	13·5
Caking index	5·5

Unfortunately, the supplies available from Central Europe were small compared with the huge demands which soon began to be made upon them; and when the sudden cold snap in October sharpened the demand for coal, the situation became utterly hopeless. It was useless sending any more vessels to hang about on the off-chance of getting a cargo. This difficulty had been foreseen, and as far back as August the Company had begun to supplement the scanty and irregular supply of Continental coal by getting consignments from America. These proving suitable, they were prepared for the complete failure of the European supply when the market became exhausted in the autumn, and made arrangements for depending entirely upon American coal for the maintenance of the gas service.

American gas coals vary considerably in their characteristics. The best are quite as good as the highest class coal obtained from the Durham seams. As far as the Company's own experience goes, the cargoes from the United States have shown high volatile and low moisture and ash contents. Their caking qualities are good. There was a certain amount of trouble experienced in dealing with the first consignments, as the coal swelled in the retorts. The following is a list of the various kinds of American coal used by the Company; and their average analyses are given.

—	Federal Fairmont.	Westmorland Yonghiogheny.	Edna Westmorland.	Kanawah.
	P.Ct.	P.Ct.	P.Ct.	P.Ct.
Moisture	1·9	2·1	1·7	3·3
Volatile matter	36·7	33·6	34·0	34·3
Ash	7·4	8·6	7·0	8·2
Caking index	8·0	7·0	13·0	13·0

By the time autumn came, America was meeting a large part of the world's demands for coal. The resources of the mining industry of the United States in the way of coal getting, coal handling, and coal transport are very great; but even they were taxed to the uttermost limit by the calls which were made upon them. The total result of the extra charges involved was that American coal delivered alongside at Poole cost three times the amount at which coal could have been obtained in normal times.

Mention has already been made of the poor caking qualities of the first consignments of foreign coal. The coke produced from it was so soft and friable that practically the whole output was little better than breeze. For some months during the summer the position was one of great anxiety, and it was only with great difficulty that the Company could set aside enough coke to afford supplies to bakers, to the hospitals, and to other customers who were rendering similar public services. In the autumn the situation was considerably relieved by purchases from outside. The Company were fortunate enough to be able to secure two cargoes of German foundry coke. Although this is unsuitable for ordinary use, it can be employed for making water gas. Accordingly, these cargoes were put into reserve, and thus some of the Company's own coke could be released for domestic and industrial purposes.

NORTH-EAST COAST COAL TRADE.

From Our Own Correspondent.

The market has been under holiday influences, and the Exchange has closed at noon each day of the week, so that little has been done except attending to immediate requirements. The demand shows little or no sign of improving, and it appears that quoted prices are still too high to interest consumers abroad, or else that they are deliberately holding off with a view to forcing a reduction. Collieries are, however, anticipating a keener home demand as the industrial situation opens out, and are unwilling to commit themselves to export contracts at such low prices as would be necessary to bring business at present.

Wear Special gas makes quote about 22s. 6d. f.o.b., and best makes 21s. 6d. to 22s. 6d.; but lower prices than these have to be accepted when collieries are in need of a prompt outlet. Seconds ask 18s. to 19s. Coking makes are fairly firm at 18s. 6d. to 19s. 6d., and this market especially is expected to develop strength during the year from the coming activity in the iron and steel industries.

Gas coke prices are down to 29s. to 30s.; but there is little demand for shipment.

YORKSHIRE AND LANCASHIRE COAL TRADE.

From Our Local Correspondent.

As yet there is no definite expression of opinion in regard to the stability of coal prices. House fuels are moving slowly, with indications of a better demand in the new year. Gas coals are easy, with full consumption at the present time. Shipping prices are normal.

COAL TRADE IN THE MIDLANDS.

From Our Local Correspondent.

The course of business over the turn of the year has been uneventful. In almost every branch there is a refusal to buy more than will suffice for immediate requirements pending the settlement of values on a new basis. As orders on the books are cleared off, collieries are revising lists in a downward direction. The position is less complicated by arrivals of foreign coal against engagements entered into before the crisis was ended.

Gas undertakings appear to be getting enough coal to carry on in respect of old contracts, and the covering of forward requirements is not being hurried. Some of them are now feeling the benefit of special arrangements entered into last spring. Like other consumers, gas engineers are contenting themselves with slender stocks, and other public utility undertakings adopt the same policy.

Progress has been made with re-stocking at hospitals and other institutions; but neither householders nor industrial consumers have given themselves much concern in this particular. During the holiday season a very heavy tonnage was left on rail between the producing and consuming centres. The unusually open weather has been an important factor in the domestic trade; retail facilities being largely immobilized. Prices have been too irregular for specification beyond saying that gradual depreciation continues.

Blast-furnace coke has been maintained at 20s. at ovens. Delays experienced in getting coking plants back into productivity have kept output down to the needs of the comparatively few furnaces that are being rekindled. Big cuts have been made in prices of gas coke.

The Rhyl Urban Council have decided to proceed at once with the extension of gas mains to the rapidly developing district to the south of the town, where already a large number of houses have been erected.

TRADE NOTES.

Gas Testing and Photometrical Apparatus.

Messrs. Alexander Wright & Co., Ltd., of Westminster, report a number of orders recently for gas testing and photometrical apparatus from Australia, Canada, New Zealand, the United States, South America, China, Sweden, Russia, Turkey, Czecho-Slovakia, and for the Polish Government Laboratories.

"Lopulco" Pulverized Fuel System.

A detailed illustrated description of the "Lopulco" pulverized fuel system has been prepared in booklet form by International Combustion, Ltd., of Africa House, Kingsway, London, W.C. This system (which comprises a number of patented engineering devices) is now operating in some of the largest electrical and industrial power plants in the world. The rapidity of its development can be gathered from the fact that in ten years the rate of burning fuel in "Lopulco" equipment rose to about 3½ million tons per annum.

CALENDARS, POCKET BOOKS, &c.

Further deliveries of the above have recently been made. From the Torbay Paint Company, Ltd., we have received one of their delightful midget pocket books, which easily fits the waistcoat pocket, and yet has great utility. Messrs. Parkinson & Co., Ltd., have again favoured us with their desk blotting pad, which incorporates at the top a calendar, inch rule, and a visible revolving date reminder. Simon Carves, Ltd., of Manchester, have supplied us with one of their extremely artistic block calendars. Under the plain figures for each day is a quotation which is worth noting and keeping in memory. A block calendar has also been received from Messrs. Newton, Chambers, & Co., Ltd., of the Thorncliffe Iron-Works, near Sheffield. The figures are of such a size that they are clear in any position, however large the office. A useful diary and engagement calendar for hanging in the office is forwarded by Messrs. R. & A. Main, Ltd. Each page carries the days for a month, which enables one to take in at a glance those things which have to be done during the period. Month by month, Drakes, Ltd., of Halifax, send us their monthly date card, each with a highly artistic scene upon it. The one for January makes us wish that duties permitted a temporary transfer from the daily environment to the winter sports in Switzerland.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Jan.* 3.

The market for pitch continues quiet, and practically nothing is being done. Prices at about 130s. per ton are suggested; but it is difficult to say at what figure business could actually be arranged.

Creosote continues firm at about 9¼d. per gallon f.o.b.

Tar spirits continue in demand, although values are somewhat lower, due to the increased quantities available. Pure benzole is about 2s. 3d. to 2s. 6d. per gallon, 95/160 solvent naphtha about 1s. 11d. to 2s. per gallon, and pure toluole about 2s. 8d. to 2s. 10d. per gallon.

Crystal carbolic acid is a little easier at about 6¾d. per lb.

Tar Products in the Provinces.

Jan. 3.

There is little alteration in the market for tar products. Small parcels of pitch have been sold at lower figures; but no considerable quantity is on offer, nor is there any inquiry of importance from the Continent.

Creosote oil is steady, with a fair demand.

Water-white products are rather easier. Carbolic acid and tar acids generally are quieter.

The average values for gas-works products during the week were: Gas-works tar, 85s. 6d. to 90s. 6d. Pitch, East Coast, 115s. to 120s. f.o.b. West Coast—Manchester, 110s. to 115s.; Liverpool, 112s. 6d. to 117s. 6d.; Clyde, 115s. to 118s. Benzole, 90 p.ct., North, 1s. 10d. to 1s. 11d.; crude, 65 p.ct. at 120° C., 1s. 4d. to 1s. 5d., naked at makers' works; 50-90 p.ct., naked, North, 1s. 11d. to 2s. Toluole, naked, North, 1s. 9d. to 1s. 10d. nominal. Coal-tar crude naphtha, in bulk, 9d. to 9¼d. Solvent naphtha, naked, North, 1s. 7d. to 1s. 8d. Heavy naphtha, North, 1s. 1d. to 1s. 2d. Creosote, in bulk, North, liquid, 8¼d. to 8¾d.; salty, 8d. to 8¼d.; Scotland, 8d. to 8¼d. Heavy oils, in bulk, North, 8¾d. to 9d. Carbolic acid, 60 p.ct., 1s. 9¼d. to 1s. 10½d. prompt. Naphthalene, £11 to £14; salts, 100s. to 110s., bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

Manchester District Tar Prices.

The average price realized for the sale of tar in the Manchester district, according to the sliding-scale, for the month of November was £6 10s. 7·28d. per ton.

Extensions at Llandudno.—After hearing the opinion of Mr. T. Duxbury, of Oldham, whom they appointed to inspect the plant, the Llandudno Urban District Council have decided to instal a new water gas plant.

Coatbridge Increase Notice Withdrawn.—In consequence of the termination of the coal stoppage, the Directors of the Coatbridge Gas Company now find that the notice already given of an increased charge of 1d. per therm will not require to be given effect to. Thus the Company's price remains at 9·6d. per therm, or 3s. 9¼d. per 1000 c.ft.—an increase of 1·2d. per therm over the pre-strike price, which remained in force until Sept. 30.

CONTRACTS OPEN.

Coal and Slack.

The Gas Committee of the Borough of Clitheroe are inviting tenders for the supply of gas coal and slack. [See advert. on p. 43.]

New Year Prospects for Chemicals.

In a new year message to the British Industries Fair number of the "Advertising World," Mr. W. J. U. Woolcock (General Manager of the Association of British Chemical Manufacturers) writes: The prospects for the British chemical industry in 1927 are distinctly good. Probably no other industry has suffered less as a result of the coal dispute. Therefore recovery in the new year is likely to be at least as rapid as, and probably more rapid than, in any other industry. The chemical exhibits in the British Industries Fair will show how every firm is extending its range of goods, and that very considerable progress has been made in the last year, particularly in regard to fine chemicals. So far, chemical products, apart from those like soap, have not been widely advertised because their appeal is not to the general public, but to the trade buyer. The Fair brings the manufacturer into direct touch with him. It is of immense propaganda value, also, in emphasizing the importance of the application of science to industry. If we are to maintain our industries against world competition, science, which finds its greatest application in this industry, must permeate every industry to a like extent. Despite the fact that the recent great chemical "merger" did not take place until after all space had been booked in the Chemical Section of the Fair, Imperial Chemical Industries, Ltd., are to exhibit; arrangements having been made to take over the centre space reserved for one of the constituent companies. This, of course, will be the new Company's first exhibit.

Price of Gas at Blackburn.—The decision of the Blackburn Corporation Gas Committee not to make any change in the price of gas, either to industrial or to private consumers, will be generally appreciated. The recent coal dispute involved an unexpected expenditure of £47,479 in the purchase of fuel, much of which was of a quality inferior to the usual coal; yet neither the quality nor the pressure was interfered with during the seven months of the strike It will be recalled that during the coal strike of 1921 it was found necessary to increase the price of gas to 4s. 10d. per 1000 c.ft.; and the existing quotation of 3s. 9d. compares with 2s. 9d. before the war.

Presentations at Newcastle.—The clerical staffs of the Newcastle-upon-Tyne and Gateshead Gas Company met in the chief offices on Dec 30, to honour two of their retiring colleagues, Mr. William Thirlaway and Mr. James Rollo, after the completion of over fifty years' service with the Company. An enjoyable musical programme was rendered by the staff, followed by refreshments. Mr. W. J. Penman (in the unavoidable absence of Mr. T. P. Ridley, Secretary of the Company), on behalf of the staffs presented to Mr. Thirlaway a gold watch, suitably inscribed, and a gold albert and wallet to Mr. Rollo. Mr. Penman spoke of their long and faithful service with the Company. The Directors of the Company presented to Mr. William Thirlaway a handsome silver salver. During the last fourteen years he was Chief Cashier to the Company.

Low-Temperature Carbonisation, Ltd.—The ninth general meeting of the Company was held at Winchester House, Old Broad Street, E.C., on Friday last—Sir Arthur Wheeler, Bart., D.L., J.P., Chairman of the Company, presiding. The Chairman said that the technical efficiency of the Parker process had been successfully proved under the tests of the Fuel Research Board. The old plant, he remarked, was not sufficiently large, and in the latter part of its operation developed defects for which improvements were devised. It was decided to dismantle it, and to erect a plant of sufficient capacity to give commercial results. They had therefore decided to erect five batteries, one in reserve and four in work, totalling 160 retorts, with a combined carbonizing capacity of 250 tons of coal per day, thus ensuring the continuous treatment of 200 tons daily. This within a few months should prove whether in working practice the profits anticipated could be realized.

Two reductions in the price of coke by the Leeds Gas Committee during the Christmas period bring the price down from 60s. to 35s. per ton.

The Bradford Gas Committee, on Dec. 31, decided to charge an all-round price of 40s. per ton for coke for all purposes. For some little time the prices have been 50s. per ton for industrial purposes and 40s. for household use.

The Bradford Corporation have received an Order (applied for last October) to charge for gas by the therm instead of by volume. With the adoption of the new measurement, the City Council are being asked by the Gas Committee, this month, to sanction an increase to 11d. per therm—or 4s. 7d. per 1000 c.ft., as against the former maximum of 4s. The changes are, if approved, to date from Jan. 11.

At a meeting of the District Committee of the Middle Ward of Lanarkshire, which was held in Glasgow last week, the Sub-Committee on the extensions of gas plant suggested that all the districts should be combined, and that a flat rate should rule throughout the area. The question of extending the manufacturing plant at Uddingston at an estimated cost of £170,000 was deferred until the Management Sub-Committee sanction the amalgamation scheme.

The first annual dinner and social evening of the employees of the Morecambe Corporation Gas Department Social Club was held recently at the Royal Hotel, when Mr. Simpson occupied the chair. Mr. T. W. Barratt (the Gas Engineer and President of the Club) was absent, having recently undergone an operation, but he sent a letter of good wishes, and stated that he would soon be back in Morecambe. There was a happy gathering of over forty persons.

STOCK MARKET REPORT.

REVIEWING the Gas Stock Market for the past year, one cannot help feeling depressed by the absence, except in two or three instances, of any improvement in the quotations of the various stocks. A year ago there were indications that prices were on the upward grade. The prospects of the companies were good; coal could be purchased, if not at a low price, at a reasonable figure; and it was confidently anticipated that the industry would have a successful year. The coal stoppage quickly disposed of these expectations, and stock values in consequence have further depreciated.

Of the companies operating in England, the greatest depreciation is shown in the South Shields Consolidated. This stock a year ago stood at an average price of 129; the quotation is now 115, a loss of 14 points. Wandsworth (Epsom) 5 p.c. has depreciated 9 points; Maidstone 5 p.c. 8½ points; and Uxbridge 5 p.c. 8 points. As stated above, there were a few exceptions, but the highest of these—Newcastle and Gateshead ordinary—is only 1¾ points up, and the remainder of the improvements are even less important. Some satisfaction may be gained by the fact that during the past few weeks values have shown signs of taking a turn for the better.

Of the companies operating abroad, Alliance and Dublin ordinary has risen 13 points, but the price was exceedingly low a year ago; Primitiva ordinary has improved by 2s. 3d. on 11s. 9d. per share a year ago; and Montevideo ordinary stands out with a 10½ points gain. On the other hand, Continental Union ordinary has fallen 8 points, and Imperial Continental 5 points. Hong Kong £10 shares, owing to the disturbed conditions in China are also 5 points lower.

In accordance with precedent at the close of each year, we have inserted in the last column of the Table the lowest and highest quotations during the past year. It will be observed that the Imperial Continental capital shows the greatest variation in price, the difference being 34 points. During 1925, however, it was as much as 52 points. Of the English companies, the price of the North Middlesex 10 p.ct. stock has varied by 19 points; Uxbridge 5 p.ct. by 18 points; and Brighton and Hove "A" by 17 points. Generally, however, the variations are less than during the previous year; and given undisturbed conditions during 1927, steady and improving prices may be expected.

Of stock markets generally it may be said that transactions have been greatly affected by the enormous amount of the new issues, there having been 1061 millions in 1926, as compared with 666 millions in 1925, the main portion of the increase being in Public Loans.

The following transactions were recorded during the week:

On Tuesday, Gas Light and Coke 86⅜, 3 p.ct. debenture 59¼, Imperial Continental 130½, Primitiva 14s. 3d., South Metropolitan 94⅞.

On Wednesday, British 105½, Commercial 3 p.ct. debenture 57, Gas Light and Coke 86, 86¼, 86⅞, 3 p.ct. debenture 58⅜, 59¼, Liverpool 7 p.ct. preference 101¼, Primitiva 14s. 3d., 14s. 4½d. Supplementary prices, British 3½ p.ct. debentures 60½.

On Thursday, Bournemouth 6 p.ct. preference 111, British 105, Commercial 4 p.ct. 80, 3½ p.ct. 79½, 3 p.ct. debenture 55½ *ex* div., Croydon sliding-scale 97½, 98½, Gas Light and Coke 86¼, 86⅜, 86⅝, 86¾, 3¼ p.ct. maximum 59¾, 4 p.ct. preference 76, 76⅞, Imperial Continental 130½, Primitiva 14s., 14s. 0¾d., 14s. 1½d., South Metropolitan 94½, 3 p.ct. debenture 58¼, South Suburban 5 p.ct. debenture 94 *ex* div. Supplementary prices, Hornsey 4 p.ct. debenture 70.

On Friday, Alliance and Dublin, 82, 82⅜, British 105¼, 106½, Croydon sliding-scale 97½, 98½, European 6⅜, Gas Light and Coke 85⅜, 86¾, 86⅞, 3¼ p.ct. maximum 60, 3 p.ct. debenture 58½, Imperial Continental 130½, 131, Primitiva 14s., Sheffield "C" 96, South Metropolitan 94¼, South Suburban 5 p.ct. 98½. Supplementary prices, Gas Light and Coke 5 p.ct. debenture (Sept. 1) 98¾, Peterfield and Selsey 5 p.ct. preference 41s. 3d., 42s. 6d., Woking 7½ p.ct. debenture 102.

The close of the year in Lombard Street was marked by widespread demands for money, and it was said that Friday constituted a record. Interest rates were in consequence high; large lenders quoting 5 p.ct. for old money for the night, and 5½ p.ct. for new. Rates in other instances, however, fluctuated between 4 p.ct. and 6 p.ct. The full amount of Treasury Bills offered was allotted, and the average rate—£4 9s. 6·63d. p.ct.—showed a drop of over 3s. 6d. p.ct. on the previous week.

Business in the Foreign Exchange Market was very quiet, and movements were correspondingly narrow. The French rate was steady, and closed with a slight rise at 122.75. Italian lire cheapened to 108 1/16. Belgas moved against this country, and closed at 34.88¾. Sterling on New York was easier, and closed ⅜ down at 4.85 11/32.

The Silver Market was inactive, and the cash price declined to 25d. per oz. Gold also receded to 84s. 10¾d. per oz.

The Bank Rate is 5 p.ct., to which it was raised from 4 p.ct. on Dec. 3, 1925. Bankers' deposit rates are 3 p.ct. The deposit rates of the discount houses are 3 p.ct. at call and 3½ p.ct. at notice.

Issue.	Shares.	When ex-Dividend.	Dividends. Prev. Hf.Yr	Dividends. Last Hf. Yr.	NAME.	Quotations. Dec. 31.	Rise or Fall.	Lowest and Highest Quotations during the Yr. 1926.
£			%p.a.	% p.a.				
171,978	Stk.	Aug. 12	5	5	Aldershot 5 p.c. max. C.	72—75		
822,992	,,	,,	4	4	Do. 4 p.c. Pref.	67—72	..	72—78
1,651,868	,,	Sept. 30	6½	6½	Alliance & Dublin Ord.	81—86	..	65—75
274,000	,,	July 8	4	4	Do. 4 p.c. Deb.	67—70	..	68—90
800,000	1	Oct. 14	1/7½	1/7½	Bombay, Ltd.	1—1¼	..	58—70
170,000	10	Aug. 26	8½	8½	Bournemouth 5 p.c.	12—13	..	⅞—1½
500,050	10	,,	7	7	Do. B 7 p.c.	12—13	..	11½—13
275,000	10	,,	6	6	Do. Pref. 6 p.c.	11—12	..	11—13
60,000	Stk.	June 24	3	3	Do. 3 p.c. Deb.	54—57	..	11—12
163,025	,,	,,	4	4	Do. 4 p.c. Deb.	74—77	..	54—59
214,740	,,	Aug. 26	12	12	Brighton & Hove Orig.	163—168	..	74—80
244,200	,,	,,	9	9	Do. A Ord.	125—130	..	163—177
1,227,500	,,	July 22	5	5	Bristol 5 p.c. max.	84¼—85¼a	..	125—142
855,000	,,	Sept. 30	7	8	British Ord.	102—107	..	84¼—91
100,000	,,	Dec. 30	7	7	Do. 7 p.c. Pref.	112—117*	−2	98—110
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb.	68—73*	..	112—125
100,000	10	Dec. 9	8	6	Cape Town, Ltd.	7—8	..	68—76
100,000	10	Oct. 28	4½	4½	Do. 4½ p.c. Pref.	6—7	..	6—8
150,000	Stk.	Dec. 30	4½	4½	Do. 4½ p.c. Deb.	68—73*	..	5¾—7½
626,860	,,	July 22	6	6	Cardiff Con. Ord.	97—100	..	66—75
237,860	,,	Dec. 30	7½	7½	Do. 7½ p.c. Red. Deb.	100—103*	..	94—101
167,150	,,	Aug. 12	6½	6½	Chester 5 p.c. Ord.	89—94b	..	98—104
79,185	1	Sept. 30	5	5	Colombo Ltd. Ord.	27/—29/-	..	87½—95
24,495	1	,,	†2/-	†2/-	Do. 7 p.c. Pref.	20/—22/-	..	24/—30/-
321,490	1	Oct. 14	1/4⅜	1/4⅜	Colonial Gas Assn. Ld. Ord.	25/—27/-	..	20/—23/-
173,900	1	,,	1/9⅜	1/7½	Do. 8 p.c. Pref.	21/—23/-	..	..
1,813,280	Stk.	Aug. 1	1/9⅜	1/7½	Commercial 4 p.c. Cap.	79—82	..	..
560,000	,,	,,	6¼	5½	Do. 3½ p.c. Cap.	78—81	..	76—87
475,000	,,	Dec. 30	5/3/4	5/3/4	Do 8 p.c. Deb.	54—57*	..	74—87
800,000	,,	Sept. 30	8	8	Continental Union, Ltd.	27—32	−1	54—58
200,000	,,	,,	§2	§1	Do. 7 p.c. Pref.	82—85	..	25—40
737,150	,,	Aug. 12	7	7	Croydon sliding scale	96—99	..	82—91
403,100	,,	,,	6½	6½	Do. max. div.	78—81	..	94—101
492,270	,,	Aug. 26	5	5	Derby Con.	107—109e	..	77—84
55,000	,,	Dec. 30	9	6	Do. Deb.	73—75c*	..	107—111
209,000	,,	Sept. 16	4	4	East Hull Ord. 5 p.c.	78—82	..	73—76
50,000	,,	Dec. 30	5	5	Eastbourne 5 p.c. Deb.	90—95*	−1	77—91
1,002,180	10	Sept. 30	†4	†3	European, Ltd.	6¼—7½	..	91—98
18,788,960	Stk.	Aug. 12	4/17/4	5/1/4	Gas Light & Coke 4 p.c. Ord.	85—87	..	4—7⅛
2,600,000	,,	,,	5¾	5¾	Do. 3½ p.c. max.	58—61	..	77—87½
4,167,020	,,	,,	4	4	Do. 4 p.c. Con. Pref.	74—77	..	57—63
5,602,620	,,	D.c. 30	3	3	Do. 3 p.c. Con. Deb.	57—60*	−1	72—80
181,315	,,	,,	—	6	Do. 6 p.c. Br'tf'd Rd. Db.	100—105*	..	56—61
130,000	,,	—	10	10	Do. 10 p.c. Bonds.	..	..	100—105
42,000	,,	—	7½	7½	Do. 7½ p.c. Ilford Deb.	..	..	..
82,500	,,	Aug. 26	6¾	6¾	Hastings & St L. 5 p.c. Conv	87—92	..	..
258,740	,,	,,	5½	5½	Do. 3½ p.c. Conv.	66—71	..	86—95
70,000	10	Oct. 14	†10	†10	Hongkong & China, Ltd.	14⅜—15½	..	66—76
173,200	Stk.	Sept. 16	5	5	Hornsey Con. 3½ p.c.	69—71	..	14⅜—21
1,976,000	,,	Nov. 11	†10	10	Imperial Continental Cap.	129—132	..	..
226,170	,,	Aug. 12	3¾	3¾	Do. 3½ p.c. Red. Deb.	68—71	..	108—142
2,127,340	,,	Aug. 12	6¾	6½	Lea Bridge 5 p.c. Ord.	94—99	..	68—70
800,000	,,	Sept. 30	5¾	5¾	Liverpool 5 p.c. Ord.	79—80b	−½	92—102
165,736	,,	Aug. 26	8	7	Do. 7 p.c. Red. Pref.	102—105b	..	78—85½
63,480	,,	Dec. 30	8	9	Maidstone 5 p.c. Cap.	112—117	..	100—105
75,000	5	Dec. 9	8	8	Do. 3 p.c. Deb.	52—57*	−1	112—128
541,920	Stk.	Nov. 25	†7	†7	Malta & Mediterranean	5½—5⅝*	..	52—59
1,061,315	,,	Aug. 12	†6	†5	Montevideo, Ltd.	79—82	..	4⅛—5⅜
360,929	,,	,,	5	5	Newcastle & Gateshead Con.	71¼—72	..	68—80
529,705	,,	,,	4	4	Do. 4 p.c. Pref.	73—74d	−¼	69½—75¼
15,000	,,	Dec. 30	3¼	3¼	Do. 3½ p.c. Deb.	67⅞—68¼*	..	73—77½
91,530	,,	Aug. 26	11¼	11¼	North Middlesex 10 p.c.	155—160	−1	66⅞—73
300,000	,,	,,	8⅜b	8⅜b	Do. 7 p.c.	109—114	..	151—170
188,120	,,	Nov. 25	7	9	Oriental, Ltd.	97—102	..	109—120
414,500	,,	Dec. 30	7¼	7¼	Plym'th & Ston'house 5 p.c.	105—110*	..	95—103
236,732	,,	Aug. 26	—	7/4/0	Portsm'th Con. Stk. 4p.c. Std.	102—107	−3	105—117
1,289,909	,,	,,	—	5/0/0	Do. 5 p.c. max.	78—81	..	..
282,200	1	—	—	—	Primitiva Ord.	13/6—14/6	..	..
800,000	100	Dec. 1	4	4	Do. 4 p.c. Red. Deb.	84—86	..	9/3—14/6
434,963	Stk.	July 22	4	4	Do. 4 p.c. Red. Deb. 1911	70—72	..	82—86
150,000	,,	Dec. 30	—	4	Do. 4 p.c. Cons. Deb.	68—70*	−2	63—72
125,000	10	Sept. 30	6	6	San Paulo 6 p.c. Pref.	7¾—8	..	..
270,000	50	July 1	6	6	Do. 5 p.c. Red. Deb.	46—49	..	74—81
419,968	Stk.	Sept. 16	5	5	Sheffield A	96—98e	..	40—42
1,047,000	,,	,,	6	5½	Do. B	96—98e	..	96 102
90,000	,,	,,	6	5½	Do. C	96—98e	..	98—102
6,609,895	10	June 11	4	—	South African	4—6	..	96—102
1,895,445	Stk.	Aug. 12	7	5	South Met. Ord.	93½—95½	..	4—7
734,000	,,	July 8	3	3	Do. 3 p.c. Deb.	57—60	..	90—96
91,500	,,	Sept. 16	3	3	Do. 6½ p.c. Red. Db.	100—102	..	55—60
1,187,795	,,	Aug. 12	6½	6½	South Shields Con.	114—116d	..	100—105
368,837	,,	Aug. 12	8½	8½	South Suburban Ord. 5 p.c.	96—99	..	114—130
647,740	,,	Dec. 30	6½	6½	Do. 5 p.c. Deb.	93—96*	..	95—103
121,275	,,	Oct. 14	5	5	South'mpton Ord. 5 p.c.max.	75—78	..	92—97
250,000	,,	Dec. 30	5	5	Do. 4 p.c. Deb.	68—73*	..	75—81
300,000	,,	Aug. 26	4	4	Swansea 7 p.c. Red. Pref.	100—102	..	68—74
300,000	,,	Aug. 26	7	7	Do. 6½ p.c. Red. Deb.	100—102*	..	98—104
120,000	,,	Dec. 30	6½	6½	Tottenham District A 5 p.c.	105—110	..	99—102
889,275	,,	July 22	7⅜	7⅜	Do. B 3½ p.c.	88—91	..	105—115
150,000	,,	,,	6½	6½	Do. 5½ p.c. Pref.	99—101	..	86—95
181,255	,,	,,	5½	5½	Do. 4 p.c. Deb.	72—75*	..	99—105
208,251	,,	Dec. 9	4	4	Tynemouth Con. and New	69½—70½d	..	72—77
	,,	Aug. 26	5	5	Uxbridge, Maidenhead, & Wycombe 5 p.c.	85—90	..	65½—71
197,294	,,	Aug. 26	6¾	6¾	Do. 5 p.c. pref.	80—85	..	80—98
88,330	,,	,,	5	5	Do. 5 p.c. Maidenh'd	85—90	..	80—98
91,800	,,	,,	6⅜	6⅜	Wandsworth, Wimbledon, and Epsom—		..	80—93
30,000	,,	July 8	8¼	8¼	Wandsworth A 5 p.c.	122—127	..	120—133
255,636	,,	,,	7	7	Do. B 3½ p.c.	102—107	..	100—114
412,450	,,	,,	5/19/0	5/19/0	Do. C and New	88—93	..	86—97
252,000	,,	,,	6⅜	6⅜	Wimbledon 5 p.c.	98—103	..	96—108
96,000	,,	,,	7½	7½	Epsom 5 p.c.	104—109	..	102—118
88,416	,,	Dec. 30	8	8	3 p.c. Deb.	54—57*	−1	54—59

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CONTENTS.

EDITORIAL NOTES.

Price Reductions—A Politic Course . . . 75
Australian Gas Institute 75
Experientia Docet 75
"Safety First" in Public Lighting . . . 76
Water Heating and Ideal Kitchens . . . 77
Institution Annual Meeting—Coal-Selling Organizations 77
Reeson-Moss Liquid Purifying Process—Coal Data for 1925—Coke and Briquettes—Gas Supply during the Coal Stoppage—Operation of a Coal Clause 78

Forthcoming Engagements 78
Personal 79
Obituary 79
Electricity Supply Memoranda 79
The New Rating Act. By Arthur Valon, M.Inst.C.E. 81
Australian Gas Institute 81
Gas Bills for 1927 83
Gas Supplies of Canada 84
Reeson-Moss Liquid Purifying Process . . 85
American Gas Association—Notes from Reports and Papers—Third Article . . . 86
Brighton and Hove Special Order—Extension of Limits and Conversion of Stock . . . 87
Wales and Monmouthshire Junior Gas Association—
Dry Purification. By C. B. Felton . . . 88
Manchester and District Junior Gas Association—
Visit to Messrs. J. H. Robinson & Co. (Liverpool), Ltd. 89
Gas-Works Instruments. By D. Benson, B.Sc., A.I.C. 89
Oxidation of Ammonium Sulphide . . . 91

LEGAL INTELLIGENCE.

Mr. George Helps's Affairs 91

REGISTER OF PATENTS.

Applications for Patents 96

MISCELLANEOUS NEWS.

Sir David Milne Watson's Message . . . 92
Colonial Gas Association, Ltd. 92
Increases in the Price of Gas 92
Decisions on the Glasgow Gas Department Strike 92
New Carbonizing Plant for Glasgow . . . 92
Gas Regulation Act Applications 93
Gas Regulation Act Orders 93
Argentina and Education of Gas Employees 93
Education in the Gas Industry—Making Competent Craftsmen at Derby 93
Trade Notes 94

MISCELLANEOUS NEWS—(*continued*).

Diaries and Calendars 94
Contracts Open 94
Coal Trade Reports—
North-East Coast 95
Yorkshire and Lancashire 95
Midlands 95
Radiation Ltd.—Bonus Shares to be Issued . 96
Current Sales of Gas Products 96
Stock Market Report 97

PARAGRAPHS.

New British Standard Specifications . . . 80
"B.C.G.A." Publicity Material—Institution of Mining Engineers 88
Will—Fuel Research Board Report—The Electromobile Association—Gas Light and Coke Company's Reduction—British Industries Fair (London Section)—Tar Conference Papers—Coke Handling at Dawsholm 91
New Holder at Montrose—Testing Lung Capacity by a Gas Meter—Coal from a Sewage Works 92
Gas Lectures at Halifax 93
Stockport and the Coal Strike 95
Belfast Gas-Works Fatality—Bilston Gaslight and Coke Company—Irish Gas Prices—New Preference Shares for Grays and Tilbury—Price of Gas at Blackburn . . . 96

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